CANADIAN THESES ON MICROFICHE

I.S.B.N.

THESES CANADIENNES SUR MICROFICHE

National Library of Canada
Collections Development Branch

Canadian Theses on
Microfiche Service

Ottawa, Canada
K1A 0N4

Bibliothèque nationale du Canada
Direction du développement des collections

Service des thèses canadiennes
sur microfiche

NOTICE

The quality of this microfiche is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us a poor photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this film is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30. Please read the authorization forms which accompany this thesis.

AVIS

La qualité de cette microfiche dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de mauvaise qualité.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, examens publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de ce microfilm est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30. Veuillez prendre connaissance des formules d'autorisation qui accompagnent cette thèse.

THIS DISSERTATION
HAS BEEN MICROFILMED
EXACTLY AS RECEIVED

LA THÈSE A ÉTÉ
MICROFILMÉE TELLE QUE
NOUS L'AVONS REÇUE

NL-339 (r. 82/08)

Canada

0-315-05957-5

National Library of Canada | Bibliothèque nationale du Canada

Canadian Theses Division | Division des thèses canadiennes

Ottawa, Canada
K1A 0N4

53877

PERMISSION TO MICROFILM — AUTORISATION DE MICROFILMER

• Please print or type — Écrire en lettres moulées ou dactylographier

Full Name of Author — Nom complet de l'auteur

Faye Nelka Schmidt Carbol

Date of Birth — Date de naissance

July 18, 1957

Country of Birth — Lieu de naissance

Canada

Permanent Address — Résidence fixe

6043-35 A Avenue
Edmonton, T6L 1G7

Title of Thesis — Titre de la thèse

An Empirical Assessment of the 'Migraine Personality' Type

University — Université

U of A

Degree for which thesis was presented — Grade pour lequel cette thèse fut présentée

M.Ed

Year this degree conferred — Année d'obtention de ce grade

1981

Name of Supervisor — Nom du directeur de thèse

Dr. George Fitzsimmons

Permission is hereby granted to the NATIONAL LIBRARY OF CANADA to microfilm this thesis and to lend or sell copies of the film.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

L'autorisation est, par la présente, accordée à la BIBLIOTHÈQUE NATIONALE DU CANADA de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.

L'auteur se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans l'autorisation écrite de l'auteur.

August 19, 1981

Date

F.N.S. Carbol

Signature

NL-91 (4/77)

THE UNIVERSITY OF ALBERTA

An Empirical Assessment of the 'Migraine Personality' Type

by

© Faye Nella Schmidt Carbol

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF Master of Education

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

Edmonton, Alberta

Fall, 1981

THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR Faye Nella Schmidt Carbol

TITLE OF THESIS An Empirical Assessment of the 'Migraine Personality' Type

DEGREE FOR WHICH THESIS WAS PRESENTED Master of Education

YEAR THIS DEGREE GRANTED 1981

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

(SIGNED) F.N.S. Carbol

PERMANENT ADDRESS:

6043-35A Avenue

Edmonton, Alberta

T6L 1G7

DATED August 19 1981

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled An Empirical Assessment of the 'Migraine Personality' Type submitted by Faye Nella Schmidt Carbol in partial fulfilment of the requirements for the degree of Master of Education.

.....
Supervisor

.....

.....

Date: May 27, 1981

ABSTRACT

The notion of a specific, measurable 'migraine personality' type which differentiates migrainous from nonmigrainous individuals was empirically tested on 73 (16 male and 57 female) migraine subjects drawn from a biofeedback treatment/research project. Through the use of the Jackson Personality Inventory these subjects were compared to the test norms along 15 personality variables.

From these comparisons support was found for an overall migraine-test norm difference in that a simultaneous comparison of all 15 variables (using a Hotelling T^2 test) revealed a significant difference ($p<.01$). Considerations of specific variables and clusters of variables according to factors tended to disconfirm previous trait difference findings. Those significant differences ($p<.05$) which were found (Value Orthodoxy and Complexity scales and the factor of socialization to traditional values) were difficult to interpret as supporting a 'migraine personality' type due to the nature of the test norm group and the casual relationships between headaches and personality characteristics.

Although common measurement scales and norms for the male and female subjects were used, a test of male-female similarity amongst the migraine group (through a multivariate profile analysis) indicated a trend towards significance thereby suggesting that these groups may differ. A subsequent analysis of female subjects alone did

not produce any of the combined sex group's significant findings for individual or factor clusters of variables although an overall significant difference ($p<.01$) remained.

In all, this study revealed some support for a 'migraine personality' type in that it indicated that the migrainous subjects and the norm group were differentiated by the JPI. However, in contrast to the literature which supported a unique 'migraine personality' type, confirmation of findings for specific personality trait differences were by and large absent. Consequently, the validity of the notion of a trait specific 'migraine personality' type for those subjects who seek headache treatment must be questioned.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to the following people for their help and support during the preparation of this thesis:

Dr. George Fitzsimmons, for his interest, encouragement and guidance throughout my graduate training;

Dr. Robert Short and Dr. Herbert Breitkreutz for their contributions to the thesis examining committee;

Mr. Patrick Carney, for his contributions to the migraine research project and especially for his invaluable assistance during the analysis stage of this study;

Mr. Ken Meen, for his participation in the migraine research project;

Ms. Vicki Trombley, for her excellent work as the typist of this thesis;

My family, for their love and support;

and especially my husband, Barry, whose love, patience, and faith in me has been a constant source of strength during the more difficult times of writing this thesis.

Table of Contents

Chapter		Page
I.	Chapter One	1
	A. 1.1 Description of Migraine Headaches	1
	B. 1.1.1 Physiology of Migraine Headaches	5
	Vascular changes.	5
	Biochemical changes.	8
	C. 1.1.2 Migraine Headaches--A Psychophysiological Disorder	10
	D. 1.2 Research Question	12
	E. 1.3 Overview	14
II.	Chapter Two	15
	A. 2.1 Clinical Observations and Psychoanalytic Findings	15
	B. 2.2 Empirical Findings	26
	C. 2.3 Summary	36
III.	Chapter Three	44
	A. 3.1 Subjects	44
	B. 3.2 Method	47
	C. 3.3 Research Instrument	48
IV.	Chapter Four	53
	A. 4.1 Hypotheses	53
	B. 4.2 Statistical Description of Data Obtained	55
	C. 4.3 One Sample Hotelling T^2 Test	55
	D. 4.4 Multivariate Profile Analysis	62
	E. 4.5 One Sample Hotelling T^2 Test, Female Subjects Only	66

V. Chapter Five 72
A. 5.1 General Statement of Findings 72
B. 5.2 Specific Findings 72
C. 5.2.1 Overall Personality Difference 73
D. 5.2.2 Specific Personality Variables 73
E. 5.2.3 Male-Female Personality Differences 83
F. 5.3 Summary 85
References 88
Appendix A Subject Selection Criteria Data.....94
Appendix B Headache Questionnaire Data.....96
Appendix C Scale Descriptions for the Jackson Personality Inventory 100

LIST OF TABLES

Tables		Page
I.	Clinical Studies and Reports	37
II.	Empirical Studies	40
III.	Statistical Description of Raw and Transformed Data	56
IV.	Intercorrelations of the JPI Scales	57
V.	Results of One Sample Hotelling T^2 Test Comparing All Migraine Subjects to Test Norms (Transformed Data)	60
VI.	JPI Scales Loading Onto the Five Identified Factors	61
VII.	Linear Combinations of Variables For Factors Comparing All Migraine Subjects to Test Norms (Transformed Data)	63
VIII.	Results of One Sample Hotelling T^2 Test Comparing Female Migraine Subjects to Test Norms (Transformed Data)	69
XI.	Linear Combinations of Variables For Factors Comparing Female Migraine Subjects to Test Norms (Transformed Data)	71

LIST OF FIGURES

Figure		Page
1.	Schematic representation of cranial artery changes during a migraine headache attack.	7
2.	Schematic Representation of the Biochemical Events of a Migraine Headache.	11
3.	Comparison of Migraine Subject and Test Norm Means on the 15 JPI Scales (Transformed Data)	59
4.	Comparison of Means of Male and Female Migraine Subjects on the 15 JPI Scales (Transformed Data)	65
5.	Comparison of Female Migraine Subject and Test Norm Means on the 15 JPI Scales (Transformed Data)	67

I. Chapter One

INTRODUCTION

A. 1.1 Description of Migraine Headaches

The frequent, intense pain of migraine headache attacks has been described throughout the medical and psychological literature for many years. Indeed, Hippocrates is quoted as having described a victim of this disorder four hundred years before Christ as follows:

> Most of the time he seemed to see something shining before him like a light, usually in part of the right eye; at the end of a moment, a violent pain supervened in the right temple, then in all the head and neck, where the head is attached to the spine...Vomitting, when it became possible was able to divert the pain and render it more moderate. (citer in Critchley, 1967, p.28)

Hippocrates' description is very similar to today's standard description of migraine type vascular headaches put forward by the Ad Hoc Committee on the Classification of Headache (1962) who offered the following description:

> The attacks are commonly unilateral in onset; are usually associated with anorexia and sometimes with nausea and vomiting; in some are preceded by, or associated with, conspicuous sensory, motor, and mood disturbances, and are often familial. (p. 127)

As it is used in this definition the term migraine headache refers to a broad category of headaches which may be experienced in any of a number of ways. The primary characteristic common to all types of migraine headaches is, as its name implies, pain in the head region. This pain is frequently unilateral in onset becoming more generalized as the headache progresses. Wolff (1963, p. 229) suggested that the usual headache sites are the "temporal, supraorbital, frontal, retrobulbar, parietal, postauricular, and occipital" regions. A common characteristic of this pain, especially in its early stages, is its throbbing, pulsating quality.

A multitude of other symptoms generally accompany migraine headaches (Wolff, 1963). Symptoms related to vascular constriction and dilation include facial flushing, nasal stuffiness, photophobia, bloodshot eyes, and auras. Gastro-intestinal symptoms include nausea and vomiting, anorexia, constipation, and diarrhea. Other symptoms include sweating and chills, disturbances in water metabolism, a dry mouth, tremors, and cold extremities. The symptoms experienced usually vary from person to person and within one person from one attack to the next.

The age of onset, duration, intensity, and frequency of migraine attacks also show a great deal of variability. Often these headaches begin during adolescence although childhood migraine headaches have also been reported (Bille, 1962). With female patients migraine attacks have been,

found, in some instances, to end with the onset of pregnancy or menopause whereas with a smaller portion of patients migraine attacks have begun at these times (Wolff, 1963). Episodes of migraine headaches can last from a few hours to many days with pain that ranges from that which is barely perceptable to completely incapacitating attacks. The frequency of such attacks varies from regular, cyclical headaches to very erratic patterns.

This extreme variability in symptoms and occurrence has lead to the designation of many different labels for or types of migraine headaches in an attempt to specify the type of attack experienced. The most commonly employed classification scheme for headaches is that which has been developed by the Ad Hoc Committee on the Classification of Headache (1962). This scheme divides headaches into fifteen groups of which the first is vascular or migraine headaches which are recurrent, often run in families, and are characterized by arterial distension. This group is subdivided into five categories of migraine headaches--classical, common, cluster, hemiplegic, and lower-half migraine headaches.

The most frequently encountered variety of migraine headache is the common migraine. This type of attack may be characterized by any combination of the above mentioned general symptoms with the exception of sharply defined auras or prodromes (Friedman, 1975). These headaches are often experienced as bilateral pain (in contrast to the unilateral

pain of classical migraine headaches) and are frequently of longer duration than classical migraine headaches (Adams, Feuerstein, & Fowler, 1980).

It is the presence of the preheadache phenomenon of prodromes or auras that most clearly differentiates classical from common migraine headache attacks. This preheadache signal may take many forms including "general alterations of sensory threshold and excitability... alterations in levels of consciousness and muscular tone... [and] disorders of higher integrative functions: perception, ideation, memory and speech" (Sacks, 1971, p. 69). The type of disturbance most often associated with the term prodrome is visual in nature--blind spots, bright flashes of light, 'seeing stars', and other types of color and light hallucinations (Wakefield, 1975). Wolff (1963) estimated that 10% of migraine sufferers experience this type of visual prodrome whereas Water (1970) found that 20-30% of the subjects in his sample experienced general headache warning symptoms (ie. any type of prodrome including visual prodromes).

Cluster migraine headaches lack a sharply defined prodrome and usually are experienced as unilateral pain. The most distinguishing characteristics of this type of headache are that it recurs one to three times per day for a few weeks and then may go into remission for extended periods of time (Pearce, 1977).

While common, classical, and cluster headaches make up the majority of migraine headaches other types have been specified. One of these is the rare variety known as the hemiplegic migraine headache. This type of headache usually involves a visual, motor or sensory loss. Likewise, opthalmoplegic migraine headaches are also rarely encountered. This is a unilateral headache which is "accompanied by extraocular muscle palsy involving the third cranial nerve" (Adams, et al, 1980). The final type, the lower-half migraine headache is also unilateral with the pain occurring primarily in the facial region.

Although there are so many types of migraine headaches which may be experienced in a diverse variety of ways, some general comments may be made in regards to the physical course or structure of an attack. Sacks (1971) suggested a five part sequence for migraine headaches involving (1) an excitement stage; (2) an engorgement stage (the prodrome stage of classical migraine headaches); (3) a prostration stage (the actual headache attack); (4) a resolution stage (recovery from headache symptoms); (5) a rebound stage (the euphoria and high energy which may follow a headache).

B. 1.1.1 Physiology of Migraine Headaches

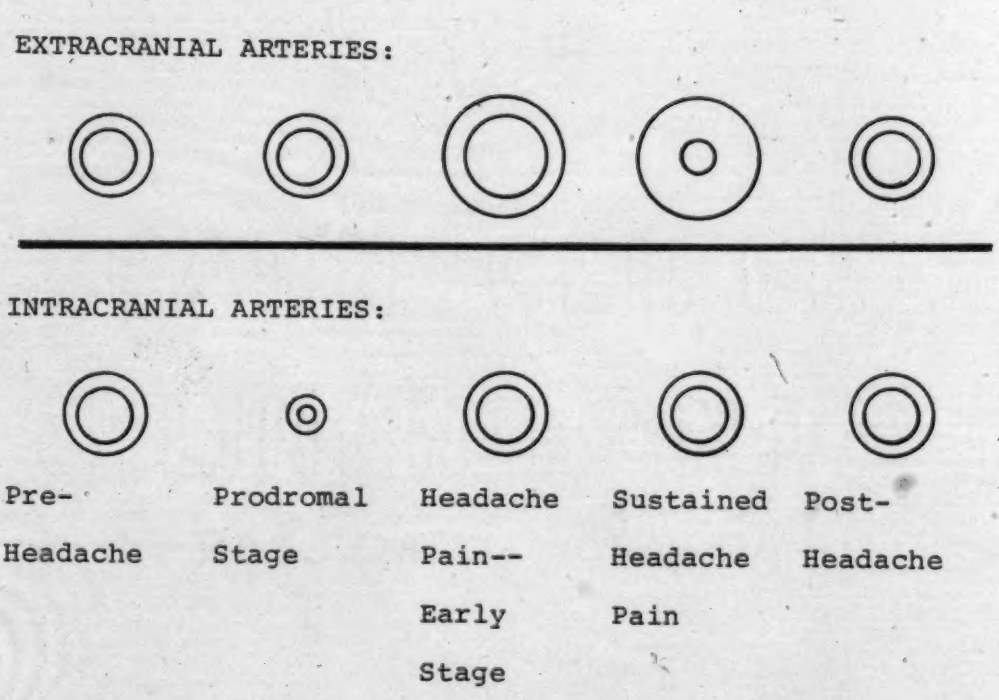
Vascular changes.

The vasomotor changes concurrent with some of the above stages of a migraine attack have been postulated as being a sequence of cranial artery vasoconstriction followed by

vasodilation and finally a return to the resting, asympotmatic state (Wolff, 1963). Using the technique of arteriography Dukes and Vieth (1964) documented the vasoconstriction of the intracranial vessels during the prodromal stage of a headache attack. Following the return of these vessels to their normal state the prodrome ended and the headache pain began. This headache pain has been found to be mediated by extracranial vasodilation (Dalessio, 1972; Kudrow, 1978). As the headache progresses and there is sustained dilation of the extracranial vessels Wolff (1963) suggested that the walls of these arteries thicken temporarily. In all, these vascular changes, which are presented schematically in Figure 1, appear to play an important role in producing the prodromes which accompany some migraine headaches as well as the pain which characterizes all migraine attacks. Inspite of this absence of noticeable prodromes from common migraine headaches Scheife and Hills (1980) have suggested that this biphasic sequence of vasoconstriction and vasodilation is present for all migraine attacks.

Figure 1

Schematic Representation of Cranial Artery Changes During a Migraine Headache Attack



Biochemical changes.

During this series of vascular changes a number of biochemical changes have been postulated which also contribute to the pain of a migraine attack. The first step in this biochemical sequence appears to involve the presence of one or more of those factors which are capable of producing platelet aggregration. Among these are hormonal changes (Hanington, 1970), epinphrine release, and tryamine intake (Kudrow, 1978). This platelet aggregration has been reported to be responsible for the release from the blood platelets of the vasoactive substance serotonin (Dalessio, 1978; Hanington, 1979). An increase of serotonin in the blood appears to result in the intracranial artery constriction that is responsible for preheadache prodromes (Anthony & Lance, 1975). In addition to this it has been suggested that the presence of sertonin also can contribute to the increase in capillary permeability and the resultant local edema which lowers the pain threshold at the headache site (Fanchamps, 1974). As the level of serotonin gradually drops due to excretion and metabolism by the body this vasoconstrictive influence is terminated. Thus, the tone of the extracranial arteries is lost and unrestricted vasodilation can occur (Fanchamps, 1974). Consequently, the prodromal stage of the headache attack ends and the headache pain begins.

As well as functioning as a vasoconstrictor, serotonin also appears to be responsible for stimulating the release

of prostaglandin from the lung tissue (Kudrow, 1978). This prostaglandin can contribute to both the vasoconstriction and dilation of the headache attack in that in low concentrations it functions as a vasoconstrictor while in higher concentrations the reverse effect is evident (Horrobin, 1977). Thus, the constriction-dilation sequence of a migraine attack seems to be produced, at least in part, by the release and gradual build up of prostaglandin.

Fanchamps (1974) outlined an additional step in this biochemical sequence involving the release from the mast cells of proteolytic enzymes, histamine, and possible serotonin. Histamine and serotonin can both result in increased capillary permeability which allows the pain threshold lowering substances better access to the headache site. The proteolytic enzymes produce one such pain substance. This substance, plasmakinin, is capable of reducing the pain threshold of the receptors on the arterial walls at the headache site.

Another pain substance produced by the proteolytic enzymes that is similar to plasmakinin and which also has been reported to build up at the headache site during a migraine attack is neurokinin (Adams, et al, 1980). This substance, which is released "during neuronal excitation" can lower the pain threshold, increase capillary permeability, cause a local, sterile inflammation, and act as a very strong vasodilator (Chapman, Ramos, Godell, Silverman, & Wolff, 1960, p. 225).

All of these biochemical events which have been intimated in the production of the pain of a migraine headache attack are presented schematically in Figure 2.

C. 1.1.2 Migraine Headaches--A Psychophysiological Disorder

The physical components of migraine headache attacks outlined above do not alone present the complete picture of this disorder. The Ad Hoc Committee on the Classification of Headache (1962, p. 717) suggested that "essential in the study of headaches, in most instances, is an appraisal of its close link to the patient's situation, activities, and attitudes". In other words, in addition to the physiological characteristics of this disorder it is important to consider the psychological factors that may be at play.

Disorders in which both physical and psychological elements appear to be at work have been labelled by the American Psychiatric Association (1968, p. 46) as "psychophysiologic disorders" or disorders which are "characterized by physical symptoms that are caused by emotional factors and involve a single organ system, usually under autonomic nervous system innervation". In this classification scheme (the Diagnostic and Statistical Manual of Mental Disorders, DSM-II) migraine headaches are listed as a "psychophysiologic cardiovascular disorder" (1968, p. 47).

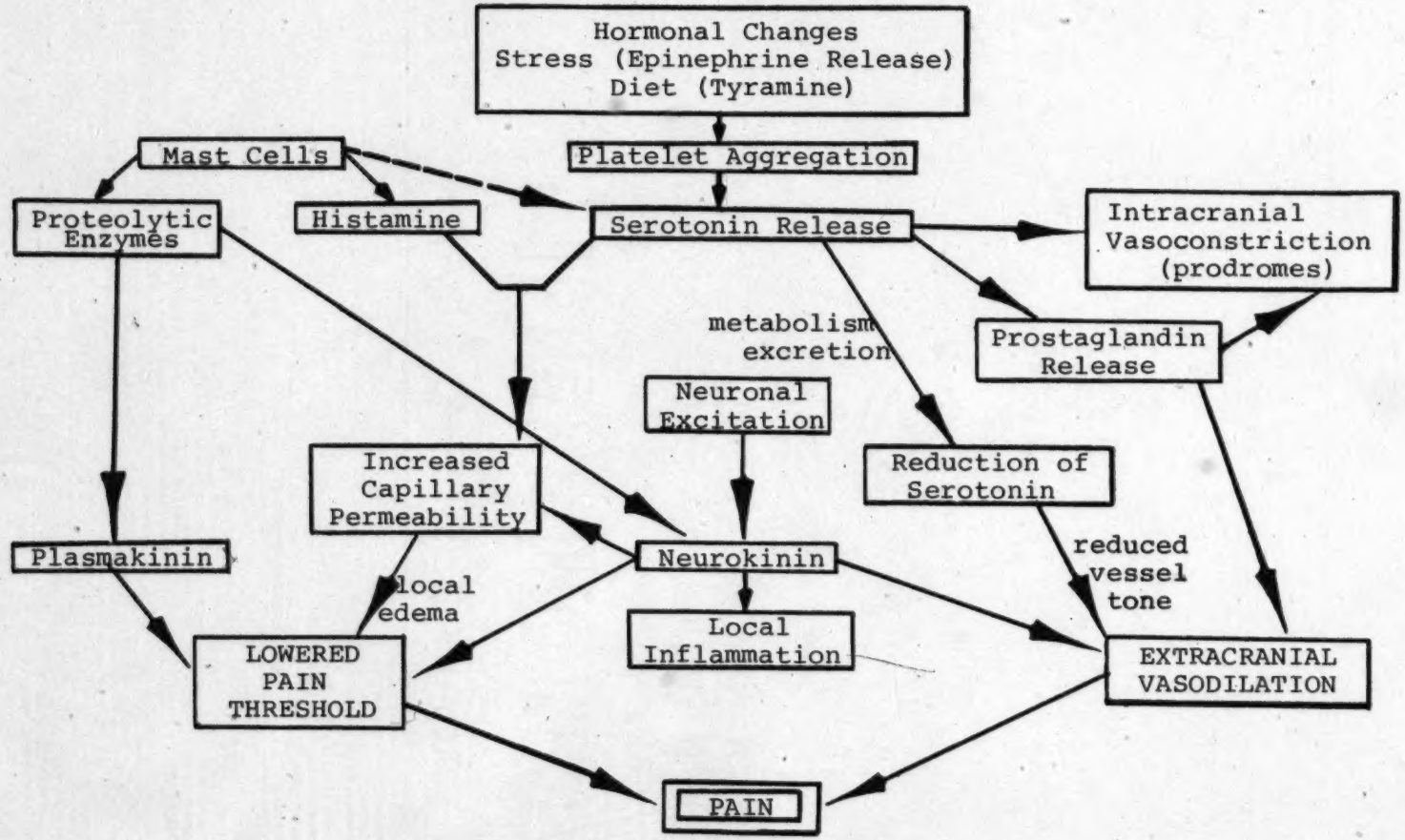


Figure 2

Schematic Representation of the Biochemical Events of a Migraine Headache

The idea that migraine headaches may, in some way, be linked to psychological factors has received a considerable amount of attention over the years. Psychological factors related to stress (Merskey, 1975; Rees, 1971) as well as general personality characteristics (Dalessio, 1972) have been considered both as correlates of migraine attacks as well as the intrinsic elements that predispose certain people to have migraine headaches. This role of psychological factors has become so prevalent that the concept of a specific 'migraine personality' type has evolved.

D. 1.2 Research Question

Inspite of the long history of research and treatment programs for migraine headaches many questions still surround this disorder. One of these, derived from considerations of the psychological aspects of migraine headaches, concerns the personality profile or type of migrainous people. While much is known about the physiological similarities amongst migraine patients during an attack, their personality similarities are much less clearly defined. Inspite of this, the idea that there are particular personality characteristics that are so unique to migrainous individuals as to constitute a 'migraine personality' type has flourished.

Since its formulation in the early part of this century (Wolff, 1937) the existence of this personality type has

been the focus of much of the literature dealing with the psychological aspects of migraine headaches (Henryk-Gutt & Rees, 1973; Kudrow, 1974; Lucas, 1977; Mitchell & Mitchell, 1971; Paulley & Haskell, 1975; Sacks, 1971; Schnarch & Hunter, 1979). The results of these considerations have not been consistent--the concept of a specific 'migraine personality' type has not been unequivocally or consistently supported. Thus, the need for further empirical validation of this notion is evident.

To provide some such empirical testing of the personality type of migrainous people this study addressed the following research question:

> Is there a set of personality characteristics or traits that clearly discriminates between migrainous and non-migrainous people?

Basic to this research question as well as to the 'migraine personality' type are the assumptions that (1) migrainous people share traits in common; (2) these traits are specific, measurable personality characteristics; and (3) in order to be considered a separate, specific personality type these traits must be able to differentiate migrainous from non-migrainous people.

Throughout this study into the personality characteristics of migraine headache subjects these assumptions have been referred to as the 'migraine personality' type.

E. 1.3 Overview

The topic of study has been introduced in this first chapter with an emphasis on delineating the physiological characteristics of migraine headaches and identifying the research area for this study. Chapter Two elaborates on the psychological aspect of migraine headache known as the 'migraine personality' type through a review of the related research and theory. Chapter Three outlines the research methodology of the present study and gives a description of the testing material used. Chapter Four presents a consideration of the statistical results obtained with Chapter Five discussing these results.

II. Chapter Two

REVIEW OF THE RELATED LITERATURE

Within the last century the notion of a 'migraine personality' type has been expressed throughout much of the literature on migraine headaches. This expression has witnessed the birth and crystallization of the 'migraine personality' type as well as the use and questioning it has been subjected to. Two major areas have contributed to this development: (1) the clinical observations, evaluations, and psychoanalysis of researchers and therapists; and (2) the empirical testing of this notion in objective, standardized ways.

The focus of this literature review is primarily on identifying the major findings from both of the above areas as they pertain to the idea that migraine headache sufferers have personality traits in common as well as on what specific traits are suggested. Consequently, this review will trace the 'migraine personality' type through its initial development in the clinical reports and its testing in the empirical studies.

A. 2.1 Clinical Observations and Psychoanalytic Findings

The notion that migrainous people have a particular set of personality characteristics in common has been widely expressed in many clinical and psychoanalytical studies and articles. Unfortunately, these studies have often lacked the

necessary degree of credibility to be considered decisive in that the problems inherent in formulating hypotheses on the basis of this type of analysis have been repeatedly revealed in them. One such problem of particular importance concerns the nature and source of these observations. As the findings reported in these studies are based solely on clincial interpretations they are open to numerous sources of error that could render them unreliable and/or invalid. Some possible errors of clinical interpretation identified by Korchin (1976) which are applicable to this literature include: (1) overinterpreting what is presented in a clinical session in order to derive expected or significant conclusions; (2) emphasizing certain patient weaknesses (over-pathologizing) or characteristics (over-psychologizing) in line with the therapist's biases; (3) schematizing and/or simplifying material to fit 'migraine personality' or other clinician hypotheses; (4) drawing conclusions from insufficient data; and (5) failure to externally verify conclusions. In all, there may be a tendency within this type of research to selectively attend to that material which provides data supportive of the researcher's a priori expectations. This problem is further confounded by two situations--the fact that much of this research is based on unrecorded material thereby eliminating any possibilities for others to examine the data, and the fact that many of these findings were based on years of data gathering which increased the probability of the researcher

finding significant pieces of information by chance (Schnarch and Hunter, 1979).

Another serious problem in these studies is their lack of control or comparison groups (Harrison, 1975). Without control groups the findings these studies have presented concerning migrainous people do not necessarily differentiate them from non-migrainous people--it is not known whether these observations are equally applicable to many or all other groups of people. In that the notion of a 'migraine personality' type assumes that migrainous people possess common characteristics that differentiate them from non-migrainous people the omission of this comparison data renders the results of these studies meaningless.

Notwithstanding these problems, the studies and reports based on clinical observations and psychoanalytic findings contained herein have made important contributions to the historical development of the 'migraine personality' type. Merskey (1975) traced this development back to the 1887's to the writings of Anstie (1871), Chapman (1873), Liveing (1873), and Day (1877). Inherent in all of these early works was a tendency at attribute (to varying degrees) the etiology of migraine headaches to a person's emotional disposition or personality. Although these writers do not use the phrase 'migraine personality' type, phrases such as 'nervous instability', 'emotional disturbance', 'nervous temperament', and 'depression' are linked in these writings to the presence of migraine headaches. Against this

background it is not surprizing that the early writers and researchers of this century turned their attention to the psychological characteristics of migraine patients.

One such researcher of particular note is Harold Wolff whose extensive work in the area of migraine headaches gave a great deal of momentum to the study of the psychological aspects of this disorder. Based on his clinical observations of 46 subjects Wolff (1937) postulated what have since become the most commonly referred to personality traits of people with migraine headaches. This constellation of traits included a preoccupation with achievement and getting ahead; perfectionism; an emphasis on efficiency; inflexibility; unrelenting resentments; caution and economy in matters of time and money; impersonal, detached social interactions; inadequate sexual adjustments; and an excessive amount of parental (especially maternal) dependency. Wolff suggested that "more than nine tenths of the subjects had 'set' personalities, with 'perfectionism' and a desire to have things 'just so' as outstanding characteristics" (p. 908).

From Wolff's and others' observations the 'migraine personality' prototype has evolved and made its impact felt on much of the treatment and research into migraine headaches. Wolff's list of traits appear to have provided the basis upon which many aspects of the psychological element of migraine headaches have since been studied.

Working at about the same time as Wolff were Touraine and Draper who, in 1934, wrote "we are convinced that

migraine is a phenomenon which occurs in persons who present similar traits of body and mind, sufficient to mark them as a special migrainous constitutional type" (p. 203). The traits which they suggested that composed this type were detachment, insecurity, boredom, perfectionism, sensitivity, anxiety, deep emotions, frustrated emotional expression, and self-pity. As did Wolff, Touraine and Draper based their conclusions on their clinical observations and evaluations of a small group of patients (N=50). Thus, although they unconditionally support a 'migraine personality' or constitutional type, the findings they have reported can only be considered a speculative indication of what migrainous people may be like.

In contrast to this clinical observational approach, Fromm-Reichman (who was also addressing the 'migraine personality' issue in 1937) drew upon her indepth psycho-analytic study of eight migraine headache patients to derive several conclusions regarding the relationship of their headaches to their personality characteristics. Among these was her suggestion that migrainous people have in common the tendency to unconsciously express repressed hostility against people who are consciously loved. Although this 'trait' is not among the usual listings of 'migraine personality' characteristics this finding does suggest a commonality amongst migraine sufferers. In that this commonality can be seen to be a basic assumption of the 'migraine personality' notion, her study appears to have

offered some general support for it.

In line with the ideas about the personalities of people with migraine headaches that were emerging in the first half of this century are Alvarez's (1947) clinical observations of 500 migraine patients. Like his contemporaries, Alvarez found migraine sufferers to be perfectionists, easily tired, tense, hypersensitive, intelligent, independent, willing to shoulder many responsibilities, routine oriented, and conscientious. These traits were considered to be so pronounced amongst so many migraine patients that Alvarez (1947, p. 3) suggested that "women with migraine are often more like other women with migraine than they are their own sisters". Consequently, although this author did not use the term 'migraine personality' to refer to this common set of characteristics it is very evident that his findings can be considered to be supportive of it.

Furmanski (1952) studied 100 adult migraine sufferers in an attempt to evaluate their characteristic traits from a psychoanalytic perspective. As would be predicted from the 'migraine personality' idea, numerous oral and anal traits common to all the patients in this group were identified. Of particular interest (in light of the 'migraine personality' described by Wolff, 1937) are the findings of, among others, the traits of anxiety, perfectionism, punctuality, thoroughness, orderliness, and an inclination to always be busy. Thus, through the utilization of the clinical

technique of character interpretation Furmanski found support for the notion that there are certain traits that are common to people who experience migraine headaches. Whether or not these traits are so pronounced that they can be utilized to differentiate between migrainous and non-migrainous people was not discussed. Consequently, although Furmanski suggested that certain traits are indeed present, his omission of the degree to which this is so rendered the value of this support for the existence of a 'migraine personality' type to, at best, a very tentative level.

Also drawing upon a psychoanalytic background, Sperling (1952) described migrainous people as being "orally fixated" with "strongly developed anal sadism" and an inability to cope with any injury to their narcissism (pp. 160-161). These traits were seen as being responsible for the migraine patient's tendency to be depressed, impulse-ridden, maternally dependent, rigid, tense, and hypersensitive. As these findings (which were derived from the psychoanalytic treatment of nine child and fourteen adult migraine patients) are closely aligned with the characteristics associated with a 'migraine personality' type they may be considered to be indicative of further clinical support for the 'migraine personality' type.

In 1954 Friedman, von Storch, and Merritt published the accounts of their work with 2000 headache (migraine and tension) patients. So ingrained is the notion of a 'migraine

personality' in the etiology of migraine headaches that the traits associated with it were cited in their paper as a diagnostic factor. Although it is so used diagnostically and the authors posit it as one of the reasons some people respond poorly to stress and hence experience migraine headaches, the 'migraine personality' type is not reported universally amongst their patients. Some migraine patients were seen as lacking the usual 'migraine personality' traits while in others these traits were subject to a great deal of individual variability. Unfortunately, no indications were given as to the personality characteristics of those migraine patients who did not fit into the 'migraine personality' type. Furthermore, the degree to which the 'migraine personality' type was rendered invalid by individual variability amongst those patients who fit this personality type was not stated. Due to these omissions this paper cannot be clearly seen as either supporting or rejecting the 'migraine personality' notion although its usage of this idea both diagnostically and as an etiological factor tends to point toward the former.

Through direct questioning and psychiatric evaluations of 500 migraine headache patients Selby and Lance (1960) concluded that 23% had obsessional trends, 22% were tense or hyperactive, 13% were experiencing an anxiety state and 42% were "normal". Inspite of these fairly low percentages (which Selby and Lance attributed to the lack of detailed information on some patients) the findings of their study

are in line with the general 'migraine personality' traits. Thus, to a limited degree, Selby and Lance have offered further clinical support for the existence of a 'migraine personality' type.

In outlining various aspects of the psychiatric treatment of migraine and tension headaches Kolb (1963) identified some of the common characteristics of migraine patients. Among these was the suggestion that migrainous people usually came from families wherein attainment, rigidity of acceptable behavioral forms, and denial of expression of any forms of aggression were predominant. As a result of this family environment Kolb saw these patients as being prone to repress their hostility and feelings of aggression and assertion with the consequence being anxiety. Thus, Kolb appears to accept and support the commonality of migrainous people in the 'migraine personality' characteristics of anxiety and repressed hostility.

In their studies on the use of behavior therapy techniques with migraine subjects Mitchell and Mitchell (1971) supported (on the basis of their clinical observations) many of the 'migraine personality' traits. They found that almost all of their 47 migraine subjects were "defensive with characteristic anxiety-hostility interaction patterns. Situationally-anxious, achievement oriented, perfectionistic, over-controlled and routine regimented behavior patterns were seen as supporting evidence for such a description" (p. 150). Two primary

characteristics of these subjects were identified as being a low threshold for uncertainty and a tendency to be cognitively inflexible. These findings are of significance due to their high degree of concurrence with the characteristics suggested by other observational studies of this personality type and their widespread occurence within this group of migrainous people. Thus, here again is clinical, observational data which supported the 'migraine personality' notion.

On the basis of his clinical observations of hundreds of migraine patients, Sacks (1971) has, unlike Mitchell and Mitchell, failed to find support for a 'migraine personality' type that is common to all migraine patients. While some of his patients did reveal such a personality type Sacks suggested "that migraine may be adopted as an expression of emotional stress and distress of many different types, and that it is impossible to fit all patients into the stereotype of the obsessive 'migraine personality'" (p. 177). Thus, according to Sacks, migraine headaches may have a variety of emotional implications but these do not always constitute or fit into the stereotyped 'migraine personality' type.

The opposite finding was reported by Paulley and Haskell (1975) who concluded from their treatment study of more than 800 migraine patients that these patients had many personality traits in common. Their clinical observations lead them to describe migrainous individuals as being

perfectionists, slaves to the clock, and as experiencing feelings of guilt, compulsion, hostile dependency, and resentment. While these findings appear to support a 'migraine personality' type this is not overtly stated by these researchers. This, combined with their omission of any comments regarding the prevalence of these characteristics within their sample and the degree to which they differentiated migrainous and non-migrainous people, makes it impossible to unequivocally state that the findings of this paper support the 'migraine personality' type. However, in that these findings are in accordance with both the 'migraine personality' notion of commonality amongst migrainous people and the specific traits normally associated with it, it appears that all indications from Paulley and Haskell's study point toward acceptance of the 'migraine personality' type.

Thus far all of the literature presented concerning the 'migraine personality' type has been based on clinical observations, evaluations, or psychoanalysis. The findings they have presented generally appear to offer fairly consistent support not only for the idea that migrainous people are common but also for the specific traits upon which this commonality is based. Research on the 'migraine personality' has not been limited however to just clinically based literature.

B. 2.2 Empirical Findings

In an attempt to overcome the many problems inherent in the clinical and psychoanalytic studies reported above many researchers have turned to empirical delineations of the personality characteristics of migraine headache patients. This move brought into play the implementation of more objective, standardized means of evaluation (psychological tests) and multiple control groups. Consequently, these researchers have been able to turn to statistical analyses of their data in order to determine the accuracy of the 'migraine personality' type.

One of the early research studies that attempted to examine the 'migraine personality' type in a more objective manner was undertaken by Trowbridge, Cushman, and Gray (1943). Using the Bell Adjustment Inventory these researchers attempted to analyze the social and personal adjustment of 16 migraine headache outpatients from the Boston City Hospital. Of the five areas of adjustment measured by this inventory migraine sufferers were found to be well adjusted in only two areas--their homes and workplaces. Less satisfactory levels were found in regards to their health, social, and emotional adjustments. On the basis of these findings Trowbridge, et al concluded "that the migraine patient tends to be similar to the psychoneurotic as far as personality make-up is concerned"(1943, pp. 516 -517). Thus, these findings appear to suggest that there is a difference in the nature of the

personality of migraine headache patients as compared to the norm group for this inventory. In so far as such a difference is evident this study can be considered to have found some empirical support for the existence of a 'migraine personality' type.

Another of the early research studies was undertaken by Ross and McNaughton (1945). This study compared the "objective Rorschach findings" (p. 74) of 199 subjects in five groups--50 migrainous subjects; 25 subjects with non-migrainous, psychogenic headaches; 50 symptom-free subjects; 50 psychoneurotic subjects (cases of anxiety neurosis and anxiety hysteria experiencing psychosomatic symptoms); and 24 subjects with various types of brain disease. The standardized procedures used to compare these groups (the Klopfer scoring system) revealed support for a number of the characteristics associated with a 'migraine personality' type. Basically, the migrainous individuals were found to have higher levels of perfectionism, conventionality, intolerance, inflexibility, striving toward success, and difficulty in sexual adjustments. Consequently, the findings of this study support the idea that there is a distinguishable, unique personality type for migraine patients as well as distinct personality types for each of the psychoneurotic and brain diseased groups of patients. These findings also appear to be in agreement with the specific traits postulated by Wolff (1937).

Like Ross and McNaughton, Kaldegg (1952) utilized the Rorschach as well as two intelligence tests (the Wechsler-Bellevue and Raven's Progessive Matrices) to assess the characteristics of 20 migraine patients. Results from both of the intelligence tests revealed that not all migraine patients are above average intellectually although a higher incident rate was found in the higher ranges. The personality test results showed that by and large this was a well adjusted, rational group although they did show a tendency to have a low tension tolerance level. In all Kaldegg (p. 681) suggested that these results indicated that "no uniform personality pattern was found for the whole group". Consequently, in contrast to the above study, the results presented by Kaldegg offer evidence which appears to refute the 'migraine personality' type.

The evidence from both the Kaldegg (1952) and the Ross and McNaughton (1947) studies however, must not be considered to be conclusive owing to the nature of the projective test that was employed. Although the Rorschach is like psychometric tests in many ways (eg. standardized test stimuli and administration) and attempts have been made to standardize the recording and scoring of responses, the final analysis of its results still relies on the researcher's synthesis of the subjects' responses (Korchin, 1976). As a result, the data obtained from this test is subject to many of the same sources of error as were the interpretations in the clinical studies cited previously.

Unfortunately neither of these studies have attempted to control for this (beyond the use of standardized scoring systems) by utilizing a double-blind format to control the influence of the researcher's expectations or by reporting inter-rater reliabilities. As a result, the findings of both of these studies cannot be considered to offer any conclusive evidence regarding the 'migraine personality' type.

Using a more completely standardized tool Maxwell (1966) also compared migrainous and non-migrainous subjects. This comparison looked at the scores on the Maudsley Personality Inventory obtained from three groups of 32 subjects each--a migraine group and two non-migrainous groups (one composed of subjects who frequently visited their doctors and the other infrequent visitors). Analysis of these scores revealed that the migraine subjects had significantly higher neuroticism scores than did the controls with no differences found on the measure of extroversion. Thus, support was found for the assumption of the 'migraine personality' type that migrainous people are different than other groups. Also, if the 'migraine personality' traits can be considered comparable in some way to the neuroticism scale on this inventory then these results can be seen as offering further support for the 'migraine personality' type.

In contrast to this use of an existing, standardized test Bihldorff, King, and Parnes (1971) developed their own

objective measures to assess the personality traits of 33 migraine patients and 41 tension headache patients in comparison to 27 non-headache control patients. Statistical analysis of the responses of each group to these measures (which consisted of a questionnaire, an adjective check list, and an anger scale) revealed significantly different patterns for each. The migraine headache group's profile was found to be "one of control, of inhibition, of emotional reactions of all kinds, and of traits that are ordinarily associated with a compulsive character structure"(p. 119). In that an inhibited, compulsive personality type can be considered to be a feature of the 'migraine personality' type the results of this study do appear, as its authors suggested, to lend empirical support for the existence of such a personality type. Furthermore, these findings suggested that since the tension and migraine headache groups differed in regards to their personality profiles the 'migraine personality' type is a unique, distinguishable migraine profile and not just a general profile applicable to all headache sufferers.

Henryk-Gutt and Rees (1973) used more standard psychometric tools to assess the personality characteristics of 50 classical migraine subjects randomly selected from the British civil service. The tests used were the Eysenck Personality Inventory (Form A), a modified form of the Minnesota Multiphasic Personality Inventory, and the Buss-Durkee Hostility-Guilt Inventory. Comparison of the

results of these tests were made with five control groups: common migraine headache subjects, non-migraine type headache subjects, headache free subjects, female classical and common migraine subjects who were attending a migraine clinic, and male asthma subjects. Statistical analysis of these comparisons showed (1) that all the migraine subjects were significantly higher than the control groups on the neuroticism scale of the Eysenck Personality Inventory; (2) that female migraine subjects were higher than the control subjects on the MMPI measures of anxiety and somatization; and (3) that all the male migraine subjects and the female migraine subjects attending the migraine clinic were higher than the control subjects on the hostility measure. These findings tend to empirically confirm the 'migraine personality' type assumption that migrainous people are significantly different than others on various personality dimensions. The specific 'migraine personality' traits revealed in this analysis (neuroticism, anxiety, somatization, and hostility) appear to be in general agreement with those postulated by other researchers. Discordant findings were reported however for the traits of ambition and obsessiveness in that these researchers did not find any evidence which differentiated these groups along these traits as would be predicted by the 'migraine personality' description of Wolff (1937) and other clinical investigators. Consequently, Henryk-Gutt and Rees can be seen as having offered some limited support for the

'migraine personality' type.

Kudrow (1974) studied the personality characteristics of 13 cluster headache patients through a comparison of their results on the 16PF with the test's normative data. Consistently similar personality traits were evidenced by this group with significant differences found on five of the sixteen factors (factors A, G, Q2, Q3, and Q4). As such the personality characteristics shared by the cluster headache patients were suggested as including tendencies to be reserved, conscientious, responsible, moralistic, self sufficient, controlling, tense, and frustrated. As cluster headaches are considered by the Ad Hoc Committee on the Classificaton of Headache (1962) to be a variety of migraine type vascular headaches the results of this study are applicable to the 'migraine personality' discussion even though it is usually limited to common and/or classical migraine headaches. It is interesting to note that although this study does move further afield in this regard its findings are in general agreement with the 'migraine personality' type. Thus, on the basis of Kudrow's study it appears that this personality type is applicable to many types of migraine headaches.

Using the California Psychological Inventory, Davis Wetzel, Kashiwagi, and McClure (1976) compared 29 vascular headache, 23 muscle contraction headache, and 22 combination headache subjects all of whom were also classified as having primary or secondary depression, other psychiatric

disorders, or no psychiatric problems. Statistical analysis of the results from this inventory indicated no significant differences when examined for headache type. However, a comparison between the psychiatric categories across headache types revealed a significant difference with the depressed group responsible for this difference. Consequently, this study did not reveal evidence supportive of a 'migraine personality' type but rather for a depressive personality type that was not unique to any particular type of headache.

In his research on migraine headaches amongst monozygotic and dizygotic twins in England Lucas (1977) assessed, among other variables, the question of personality similarities in twins discordant for migraine attacks. Using the Personality Questionnaire (an abbreviated version of the Maudsley Personality Inventory) Lucas compared results on the psychoticism, neuroticism, extraversion, and lie scales. This analysis revealed no significant differences on any of these variables between migrainous twins and their non-migrainous partners. In that the 'migraine personality' type would predict that the personalities of these twins should differ, this study, in contrast to many of those presented above, appears to refute the validity of this notion.

Rather than drawing solely upon existing psychological tests, Schnarch and Hunter (1979) developed their own questionnaire which incorporated, revised and added to other

tests (ie. the Spielberger Trait Anxiety Scale, and the Buss-Durkee Hostility Inventory). Statistical analysis of this questionnaire compared 65 migrainous college students to a control group of 147 college students who were non-migrainous headache sufferers. In contrast to what would be predicted by the 'migraine personality' type, Schnarch and Hunter found only two, low (but significant) correlations of traits with the migraine subjects--as compared to the control group the migraine subjects were more suspicious of others and were more afraid of expressing anger. Although these traits were in line with the general 'migraine personality' descriptions they were not considered by these researchers to be sufficient to warrant support of this model. Thus the findings of this study, like the study reported above by Lucas (1977), tend to disconfirm the existence of a 'migraine personality' type.

In a study designed to compare female migraine subjects to matched non-headache controls, Price and Blackwell (1980) assessed the personality variables of depression, locus of control, and anxiety as well as the subjects' response to anxiety-provoking stimuli. No relationship between depression and the presence of headache was found from the Zung Depression Inventory nor was any indication given that migrainous individuals differ significantly on measures of locus of control (from the Health Locus of Control scale). However, in line with the 'migraine personality' type, these researchers reported significantly higher anxiety (both from

the Taylor Manifest Anxiety Scale and the Spielberger Trait Anxiety Inventory) and social conformity levels (from the Eysenck Personality Inventory, Form A) for the migraine group. While high anxiety was indicated from the personality testing this was not expressed in the test of these subjects' responses to an anxiety-provoking film. Hence this study suggested that while migraineurs can identify internal stress they tend to minimize external stressors and inhibit emotional expressions of anxiety. In that this study suggested that migrainous subjects were higher on anxiety and social conformity and tended to inhibit emotional expressions it can be seen as supporting the 'migraine personality' type. This support is blurred however by the omission from the report of this study of descriptions of the migraine and control subjects beyond their sex (female) and sample sizes (N=22 to 31) with the latter being reported for all but one testing incident. Consequently, it is unknown whether this was a clinical migraine sample, what diagnostic criteria were used to form the migraine and non-headache groups, and so forth. Without such information this support of 'migraine personality' characteristics must be considered tentative.

From all of the above studies it appears that in contrast to the general support of a 'migraine personality' type provided from the clinical studies, the empirical studies into this personality type have found mixed support. Some of the empirical studies present findings which are in

total agreement with the clinical studies while others offer only partial support or even disconfirmation of the 'migraine personality' type.

C. 2.3 Summary

The literature that has been reported above has attempted to address the 'migraine personality' idea from the clinical reports of observational and psychoanalytic case studies of migraine patients as well as the empirical testing of migrainous and non-migrainous subjects. The findings of these studies (which are as broad as the time period they cover) are summarized in Tables 1 and 2.

It is evident from this review of the 'migraine personality' literature that this personality type has not been unequivocally or consistently supported. The question 'Is there a set of personality characteristics or traits that clearly discriminates between migrainous and non-migrainous individuals?' has not been satisfactorly answered. As a result our current understanding of the personality characteristics of migraine patients is, at best, inadequate and the need for further research into the 'migraine personality' type is apparent.

Table 1

Clinical Studies and Reports

INVESTIGATOR	MIGRAINE SUBJECTS	PSYCHO-ANALYSIS	CLINICAL OBSER-VATION	FINDINGS	SUPPORT
Wolff (1937)	46 subjects		X	Migraine subjects were: achievement oriented; perfectionists; efficient; inflexible; resentful; economical with time and money; socially detached; poorly adjusted sexually; strongly dependent on mothers.	X
Touraine & Draper (1934)	50 migraine patients (13 males; 37 females)		X	Migraine subjects were: detached; insecure; perfectionists; sensitive; anxious; frustrated in emotional expression; had deep emotions and self-pity.	X
Fromm-Reichmann (1937)	8 migraine patients (2 males; 6 females)	X		Migraine subjects were: unconsciously hostile against people who were consciously loved.	X

Alvarez (1947)	500 migraine patients (mostly females)		X	Migraine subjects were: perfectionists; easily tired; tense; hypersensitive; intelligent; independent; responsible; routine oriented; conscientious.	X
Furmanski (1952)	100 migraine patients (35 males; 65 females)	X		Migraine subjects were: anxious; perfectionists; punctual; thorough; orderly; always busy.	X
Sperling (1952)	14 adult and 9 child migraine patients	X		Migraine subjects were: depressed; impulse-ridden; maternally dependent; rigid; tense; hypersensitive.	X
Friedman, von Storch, & Merritt (1954)	2000 migraine and tension headache patients		X	Found a great deal of individual variability.	Quest-ionable
Selby & Lance (1960)	500 migraine patients (200 males; 300 females)		X	Migraine subjects were: obessional; tense; hyperactive; anxious.	X Very Limited
Kolb (1963)	not stated		X	Migraine subjects had: repressed hostility, aggression, and assertion.	X

Mitchell & Mitchell (1971)	47 migraine subjects	X	Migraine subjects were: defensive; anxious; achievement oriented; perfectionists; controlled; routine regimented; inflexible.	X
Sacks (1971)	not stated	X	Variable (no one profile fit all patients).	
Paulley & Haskell (1975)	800 migraine patients	X	Migraine subjects were: perfectionists; slaves to the clock; guilt ridden, compulsive; dependent; resentful.	X

Table 2

Empirical Studies

INVESTIGATOR	MIGRAINE SUBJECTS	CONTROL SUBJECTS	TEST(S)	FINDINGS	SUPPORT
Trowbridge, Cushman, & Gray (1943)	16 outpatients (4 males; 12 females)	test norms	Bell Adjustment Inventory	Migraine subjects were: well adjusted to homes and workplaces; poorly adjusted in health, social, and emotional areas.	X Limited
Ross & McNaughton (1945)	50 patients (16 males; 34 females)	25 psychogenic headache subjects; 50 symptom free subjects; 50 psycho-neurotic subjects; 24 brain diseased subjects	Rorschach	Migraine subjects were higher on: perfectionism; conventionality; intolerance; inflexibility; striving toward success; and had difficulty in sexual adjustments.	X

Kaldegg (1952)	20 migraine patients (4 males; 16 females)	20 chronic duodenal ulcer cases 10 male and 10 female volunteers test norms	Rorschach Wechsler-Bellevue Raven's Progressive Matrices	No uniform pattern found.	
Maxwell (1966)	32 migraine subjects	32 subjects who visit doctors frequently; 32 infrequent visitors	Maudsley Personality Inventory	Migraine subjects had: higher neuroticism scores.	X
Bihldorff, King, & Parnes (1971)	33 migraine patients	41 tension headache patients; 27 non-headache controls	developed own measures	Migraine subjects were: controlled; inhibited; compulsive.	X

Henryk-Gutt & Rees (1973)	50 subjects randomly selected from British civil service (25 males; 25 females)	50 common migraine subjects; 50 non-migraine headache subjects; 50 headache free subj.; 18 migraine clinic patients; 19 asthmatic subjects	Eysenck Personality Inventory MMPI (modified form) Buss-Durkee Hostility-Guilt Inventory	Migraine subjects were: more neurotic; higher on anxiety and somatization scores (females only); and higher on hostility measures (only some migraine subjects).	X Limited
Kudrow (1974)	13 cluster headache patients (11 males; 2 females)	test norms	16PF	Migraine subjects were: reserved; conscentious; responsible; moralistic; self sufficient; controlling; tense; frustrated.	X
Davis, Wetsel, Kashiwagi, & McClure (1976)	29 vascular headache subjects	23 muscle contraction headache subjects; 22 combination headache subjects	California Personality Inventory	No differences found according to headache type. Differences found when subjects were classified as depressed, other psychiatric disorders, and no psychiatric problems with depressed subjects significantly different from the other groups.	

Lucas (1977)	292 subjects (24 males; 268 females)	twins of the migraine sample who did not have migraines	Maudsley Personality Inventory--abbreviated version	No differences found.	
Schnarch & Hunter (1979)	65 migrainous college students	147 non-migrainous headache college students	developed own question-naire	Migraine subjects were: suspicious; afraid of expressing anger.	
Price & Blackwell (1980)	not stated	not stated	Eysenck Personality Inventory Form A	Migraine subjects were: more anxious; higher on social conformity; lower on tendency to admit faults; inhibited in expression of anxiety arising from external stimuli; no different on depression measure.	X
	25 female migraine subjects	22 matched normal controls	Zung Depression Inventory Health Locus of Control		
	31 female migraine subjects	26 matched normal controls	Spielberger Trait Anxiety Inventory Taylor Manifest Anxiety Scale		
	22 female migraine subjects	22 matched normal controls	own quest-ionnaire measuring anxiety responses		

III. Chapter Three

METHODOLOGY

In order to increase our understanding of the 'migraine personality' type, an empirical assessment of the personality characteristics of people with migraine headaches was undertaken during the spring and summer of 1980.

A. 3.1 Subjects

The subjects utilized in this study were drawn from a migraine treatment/research project conducted at the University of Alberta. Potential subjects for this project were recruited in Edmonton and area through the local public media channels (television, radio, newspapers, and a magazine article) as a result of a press release announcing the study. Telephone screening of all of those who responded to this advertising was undertaken to eliminate those subjects suffering from tension headaches, cluster headaches, and other types of head pain not usually associated with migraine headaches. To be included in this project a subject had to report a headache history of at least two years in duration with a minimum of one headache per month and no more than three per day. Subjects using medication for their headaches were accepted into the project as long as they were still experiencing this minimum headache frequency. Other criteria included (1) a lower age

limit of 18 years (age of legal consent) and an upper limit of 55 years (to control for spontaneous recovery due to advancing age); (2) that the subject was not using oral contraceptives. In addition to the above, the subject had to report three of the following five conditions (derived from the screening criteria employed by Blanchard, Theobald, Williamson, Silver, & Brown, 1978): (1) one-sided head pain; (2) pulsative or throbbing head pain; (3) nausea or vomiting during headaches; (4) sensitivity to light during headaches; and (5) diagnosis by a physician of migraine headache.

From this screening a total of 73 subjects were selected for this study (57 females and 16 males). These subjects ranged in age from 20 to 54 years with a mean age of 38.96 years. All subjects reported a minimum of one headache per month and a headache history of at least two years. The data obtained through this screening is summarized in Appendix A. In addition, further information concerning the nature of the subjects' headaches was collected through a take-home questionnaire after the subject was accepted into the project. Appendix B contains the results from this questionnaire for all but four subjects who withdrew from the project prior to receiving this questionnaire.

The use of a migraine sample that is receiving treatment for their headaches raises the question of the applicability of the findings of this study to migrainous people in general. Considering Waters' (1970) indication

that as much as 37% of men and 54% of women in the general population may have suffered at some time from migraine headaches symptoms it appears that only a small minority of potential headache patients actually seek treatments. Consequently, the degree to which this sample of treatment oriented subjects represents all migrainous people is unknown.

Two studies are of particular interest in regards to the issue of the applicability of this sample. Schnarch and Hunter (1979), based on their examination of the 'migraine personality' literature, concluded that a "clinical treatment fallacy" (p. 300) existed throughout this literature. Basically they suggested that migraine subjects in treatment programs were not representative of the migraine population. Similarly, Henryk-Gutt and Rees (1973, p. 141) suggested that "patients presenting themselves for treatment at special Migraine Clinics are not fully representative of migraine sufferers in general". This difference was seen as stemming from the fact that the migrainous people in the clinics were more neurotic than those not in a treatment program (who were, however, more neurotic than the general controls).

In light of these two accounts it appears that the sample used in the present study may not be considered to be truly representative of the total migraine population. However, in that the major contribution of the present study lays in its usefulness in or applicability to the

understanding and treatment of a clinical population, the use of a sample derived from a treatment program is justified. While acknowledging the limitations on the generalization of any findings of this study, this sample does have the potential of increasing our understanding of the clinical migraine population.

The control group against which this migraine sample was compared was provided by the test norms for the instrument used (the Jackson Personality Inventory, Jackson, 1976). These norms are based on the results of this inventory for 2000 female and 2000 male subjects. This normative sample was drawn from 43 American and Canadian universities and colleges.

B. 3.2 Method

Upon acceptance into the migraine treatment/research project all subjects attended a general meeting at which the project was explained and participation consent was obtained. For 61 of the subjects in the present study this was followed by a four week baseline period of headache monitoring and four weeks of treatment. During the first week of this biofeedback treatment a standardized personality inventory was administered to each subject.

The remaining 12 subjects used in this study were given the personality inventory at the general meeting. The different administration time for these subjects was due to their assignment to an autogenic relaxation treatment group

which was withheld until an extended (six month) baseline period was completed. Thus, to confine the data collection to a similar time period the inventory was given to these subjects at their general meeting.

In addition to the 74 subjects reported above, the personality inventory was given to nine other subjects. Six of these subjects did not complete the inventory due to their withdrawal from the project. The remaining three subjects (who also withdrew from the project) completed the inventory but were not included in the present study as initial screening data was not available for them and hence their appropriateness for inclusion was questionable.

C. 3.3 Research Instrument

The Jackson Personality Inventory (Jackson, 1976) was utilized as the tool for assessing the personality characteristics of the migraine subjects in this study. As this inventory was developed using a "dimensional formulation of personality" (Jackson, 1976, p. 18), all people are assumed to possess the traits indicated by its scales to some degree. Thus, the higher an individual scores on a given scale the more likely he/she is to occupy a position on the underlying dimension of the scale. The sixteen scales (based on 320 True/False items) which compose this inventory are:

Anxiety	Responsibility
Breadth of Interest	Risk Taking

Conformity	Self Esteem
Complexity	Social Adroitness
Energy Level	Social Participation
Innovation	Tolerance
Interpersonal Affect	Value Orthodoxy
Organization	Infrequency

A complete description of each scale is contained in Appendix C.

Each of these scales consists of 20 items which were constructed and selected following the rational test construction or construct-oriented method (Jackson, 1976) used by Jackson (1967) for his earlier personality test, the Personality Research Form (PRF). Inspite of the skepticism voiced by supporters of empirical methods of personality scale construction (Lykken, 1978) the items produced for this inventory generally do appear to be appropriate to the scale definitions provided in the manual. As Goldberg (1978, p. 869) suggested, "by and large Jackson has devised and selected appropriate items, and JPI users can be reasonably assured that the difference between high and low scorers on any scale do indeed reflect a content-coherent pattern of individual differences in self-report".

In the development and selection of items for this inventory response acquiescence and social desirability were controlled for. The former was restrained by equating the number of true and false keyed items for each scale. The effectiveness of this control was illustrated (Jackson,

1976) in the correlations of the JPI and true-keyed, neutral range items drawn from the California Psychological Inventory in which no correlations exceeded .4 (absolute correlations ranged from r=.02 for the Energy Level and Social Participation scales to r=.39 for the Value Orthodoxy scale). Likewise, the influence of a social desirability response style was also minimal with correlations of the JPI scales and the PRF desirability scale yeilding only two correlations greater than .3--the Self Esteem scale (r=.36) and the Responsibility scale with a correlation of .39 (Jackson, 1976). Further controls for random responding, carelessness, reading problems and so forth are provided by the Infrequency scale.

Validity coefficients for the JPI were obtained through comparisons with an adjective checklist, self ratings and multiple peer ratings (Jackson, 1976). The coefficients reported from a sample of 70 vary from .42 to .79 with a median of .70 for the adjective checklist for all but the Social Adroitness scale (r=.15). Similarly, the Social Adroitness scale produced low validity values for the self and peer rating estimates with coefficients of .10 and -.01 respectively. This scale aside, the coefficients for the JPI and the self ratings vary from .18 to .77 (with a median of .56) and from .18 to .66 (with a median of .38) for the peer rating scale. In all, with the exception of the Social Adroitness and Breadth of Interest scales, all but one validity coefficient are significant at the .05 level.

Further validity testing (Jackson, 1976) with a larger sample of 116 female university students utilizing self ratings and roommate ratings furnished similar findings. For the self ratings coefficients which ranged from .09 (for the Social Adroitness scale) to .77 (for the Self Esteem scale) were obtained with all but two being significant at the .01 level. The individual roommate ratings produced much lower coefficients ranging from .03 (for the Social Adroitness scale) to .43 (for the Risk Taking scale) with five of the fifteen scales failing to reach significance at the .05 level.

Jackson (1977) reported coefficient alpha and coefficient theta reliability values for the JPI derived from two American colleges with samples of 82 and 307 undergraduate students. Coefficient alpha values ranged from .60 (for the Tolerance scale) to .88 (for the Self Esteem scale) with a median of .795 while coefficient theta values varied from .75 (also for the Tolerance scale) to .95 (for the Anxiety and Self Esteem scales) with a median of .908.

The generally favorable statistical descriptions of the JPI outlined above contributed greatly to its selection for use in this study. In addition to this, the nature of the population for which the JPI was designed made it applicable. This inventory lends itself well to use with a normal or nonpsychopathological population which approximated fairly well the migraine subjects in this study. Aside from these points, the primary rational

underlying the implementation of the JPI was derived from the nature of its measurements. Many of the descriptions of high and low scorers on the JPI scales (reported in Appendix C) related easily to the literature. For example, the following adjectives were used in the JPI to describe high scorers on the Anxiety scale: "worried, tense, nervous, preoccupied, anxious, edgy, distressed, agitated, [and] fearful" (Jackson, 1976, p. 10). In that high anxiety as well as many of its descriptors were often mentioned in regard to the 'migraine personality' type (Henryk-Gutt & Rees, 1973; Mitchell and Mitchell, 1971; Selby & Lance, 1960) this scale was of value. Similarly, the JPI scales of Organization, Responsibility, Risk Taking, and to a lesser extent Breadth of Interst, Conformity, Interpersonal Affect, Tolerance, and Value Orthodoxy all seemed to correspond well to 'migraine personality' characteristics.

IV. Chapter Four

DATA ANALYSIS

A. 4.1 Hypotheses

The literature on the 'migraine personality' type reported previously does not allow the logical derivation of a clear scientific hypothesis. While the clinical observations reported tend to support this personality type there are a sufficient number of empirical studies which do not thereby making the formulation of such a hypothesis tenuous. Consequently, for purposes of the present study, the hypothesis adopted was:

> There are no differences between the means of migraine subjects and the test norm means on the scales of an objective, standardized personality inventory (the Jackson Personality Inventory).

In that it was possible for migraine headache subjects to be higher or lower on any of the measurement scales utilized, the following non-directional alternative hypothesis was employed:

> There is a set of objectively measurable personality characteristics that discriminate migrainous people from others (the test norm group) in that the means on the Jackson Personality Inventory are not equal for these groups.

It is this alternative hypothesis that entertains a unique 'migraine personality' type.

In order to empirically address the research question 'Is there a set of personality characteristics or traits that clearly discriminate between migrainous and non-migrainous individuals?' the hypotheses stated above were tested in the following form:

$$\text{Ho: } \begin{bmatrix} \mu_1 \\ \vdots \\ \mu_{15} \end{bmatrix} = \begin{bmatrix} \mu_{o_1} \\ \vdots \\ \mu_{o_{15}} \end{bmatrix} \qquad \text{H1: } \begin{bmatrix} \mu_1 \\ \vdots \\ \mu_{15} \end{bmatrix} = \begin{bmatrix} \mu_{o_1} \\ \vdots \\ \mu_{o_{15}} \end{bmatrix}$$

This null hypothesis states that there is no difference between the migraine sample and the norm group on any of the personality subtests. In statistical terms this comparison is between the linear composite vector of the mean vectors of the migraine sample and that of the test norms. The alternative hypothesis utilized was the non-directional hypothesis of difference between this simultaneous comparison of means for these groups.

The 15 subtests used in this study were derived from the substantive personality scales of the JPI (the sixteenth scale, the Infrequency scale, was not employed as it constituted a response/validity check rather than a personality variable). The criterion of the presence of migraine headaches was used to form the basis of the migraine-test norm comparison.

B. 4.2 Statistical Description of Data Obtained

To describe the data obtained from the personality testing for each of the male and female groups of migraine subjects, the means, standard deviations, and intercorrelations between the JPI scales were calculated on raw and transformed scores. The raw scores were the subjects' actual scores (out of a possible 20) for each scale while the transformed scores were those obtained from the profile norms wherein the norming population's scores on each scale comprised a mean of 50 and a standard deviation of 10. This transformed data overcame two problems in the raw score data: (1) the problem of male-female score comparisons inherent in the raw scores was resolved through the utilization of this measurement scale since its population means are equal for both sexes; and (2) the problem of between scale comparisions was likewise resloved as the means for all scales are equal.

The means and standard deviations for raw and transformed scores are reported in Table 3. Table 4 contains the scale intercorrelations (raw score data) for both sexes.

C. 4.3 One Sample Hotelling T^2 Test

In order to directly test the hypothesis concerning the difference between the migrainous and non-migrainous subjects on the 15 variables employed, a one sample Hotelling T^2 test (Hotelling, 1931) was performed. Through the use of the transformed data in which male - female

Table 3

Statistical Description of Raw and Transformed Data

Subjects	JPI Scales	Raw Scores				Transformed Scores	
		Migraine		Norm		Migraine	
		$\bar{X}^a$	s	$\bar{X}$	s	$\bar{X}^b$	s
Males	1	12.88	2.50	10.38	4.43	55.12	5.65
	2	8.12	2.78	11.41	4.29	42.00	6.48
	3	7.31	3.24	11.15	3.39	37.94	9.71
	4	10.00	4.09	8.30	4.36	53.38	9.43
	5	9.25	3.38	12.04	3.83	42.25	8.86
	6	11.25	5.20	13.09	4.48	45.38	11.64
	7	10.75	3.31	10.97	4.35	49.00	7.45
	8	10.31	3.44	10.72	4.21	48.62	8.23
	9	14.25	2.28	11.32	3.56	57.62	6.30
	10	5.94	3.47	10.39	4.78	40.12	7.28
	11	10.31	4.56	11.57	4.42	46.75	10.31
	12	9.25	3.65	10.47	3.26	45.75	10.95
	13	7.31	3.88	9.18	4.69	45.62	8.43
	14	9.62	2.83	12.29	3.31	41.75	8.71
	15	11.06	3.83	6.39	3.97	61.38	9.54
Females	1	13.04	5.00	12.42	4.24	50.93	11.79
	2	12.70	4.28	11.70	4.21	51.82	10.17
	3	9.77	2.97	11.36	3.43	44.93	8.53
	4	8.81	4.18	9.66	4.50	47.44	9.56
	5	11.21	4.29	11.08	3.96	49.02	11.63
	6	11.05	5.44	11.68	5.21	48.30	10.60
	7	13.16	3.58	13.71	4.02	48.21	9.08
	8	12.68	4.40	10.71	4.20	54.44	10.41
	9	14.88	3.21	12.88	3.24	55.61	9.73
	10	5.86	3.92	7.62	4.28	45.37	9.12
	11	12.33	4.69	10.46	5.10	53.19	8.96
	12	8.84	3.26	9.65	3.29	47.05	10.18
	13	8.74	4.35	10.60	4.65	45.47	9.36
	14	11.42	3.47	12.38	3.18	46.47	10.93
	15	10.74	4.14	7.93	4.58	55.63	9.01

[a]Mean scores for scales with a maximum total of 20.

[b]Norm group transformed data means for all scales is 50.

[c]Norm group transformed data standard deviations for all scales is 10.

Table 4

Intercorrelations of the JPI Scale

JPI Scales	Anx	Bdi	Cpx	Cny	Enl	Inv	Iaf	Org
Anx	***	-20	-32	31	-32	-28	42	01
Bdi	20	***	40	-25	27	67	-03	24
Cpx	15	23	***	-28	23	44	-12	-08
Cny	14	-26	-08	***	-26	-30	55	02
Enl	04	-07	-04	18	***	41	-18	37
Inv	03	44	-42	-22	46	***	02	12
Iaf	25	08	14	17	-33	-08	***	-01
Org	08	-02	-08	50	06	11	14	***
Rsy	-13	32	-00	05	20	11	-41	13
Rkt	-02	45	10	-32	18	46	25	-15
Ses	-47	-16	-14	-40	-34	12	-22	-13
Sca	11	01	53	12	-10	37	37	17
Spt	-08	-14	-08	01	-36	06	29	01
Tol	-42	46	-08	-52	-38	08	17	-27
Vlo	-14	02	-42	11	-02	-30	33	-03

JPI Scales	Rsy	Rkt	Ses	Sca	Spt	Tol	Vlo
Anx	09	-35	-29	-16	16	-40	47
Bdi	14	25	30	15	-08	39	-24
Cps	-16	34	26	17	-14	33	-49
Cny	18	-18	-12	18	35	-41	49
Enl	-11	25	45	36	-16	23	-28
Inv	10	25	39	20	-06	52	-23
Iaf	24	-15	11	24	50	-23	44
Org	30	-09	22	-00	09	02	04
Rsy	***	-26	-04	-05	14	13	36
Rkt	-22	***	26	33	-11	13	-30
Ses	02	19	***	38	25	27	-20
Sca	02	13	08	***	03	-04	01
Spt	-33	28	58	10	***	-02	34
Tol	11	29	20	09	11	***	-43
Vlo	-08	-11	-35	-14	-30	23	***

Note: Decimals omitted. Females (N=57) above the diagonal, males (N=16) below the diagonal.

differences were accounted for, calculations in which all 73 migraine subjects were treated as one group were possible. Thus, the 15 means from the JPI for this subject group were all simultaneously compared to those of the test norms for transformed scores.

A comparison of this type was possible through the utilizaton of the Hotelling T^2 test which takes into account the 15 repeated measures for each group. Through this multivariate analog of the univariate t-test for two dependent samples, all means could simultaneously be compared thereby overcoming the problem of bias in finding significant differences by chance when the t-test is repeated numerous times on the same sample (Tatsuoka, 1971). Thus, this analysis compared the means plotted in Figure 3.

Results of the Hotelling T^2 test revealed a T^2 of 181.85. Translation of this statistic into an F-ratio produced an F of 9.77 (df1=15; df2=58) whose probability was less than .01. Therefore, it was concluded that for the male-female combined group of migraine subjects the null hypothesis was untenable.

To isolate the variable(s) contributing to the rejection of this hypothesis, the mean of the migraine and test norm groups for each variable were compared. For each of the 15 variables the Hotelling T^2 and corresponding F-ratio were calculated along with its confidence interval. Results of these calculations are reported in Table 5. From these comparisons two variables were found to produce

Figure 3

Comparison of Migraine Subject and Test Norm Means on the 15 JPI Scales (Transformed Data)

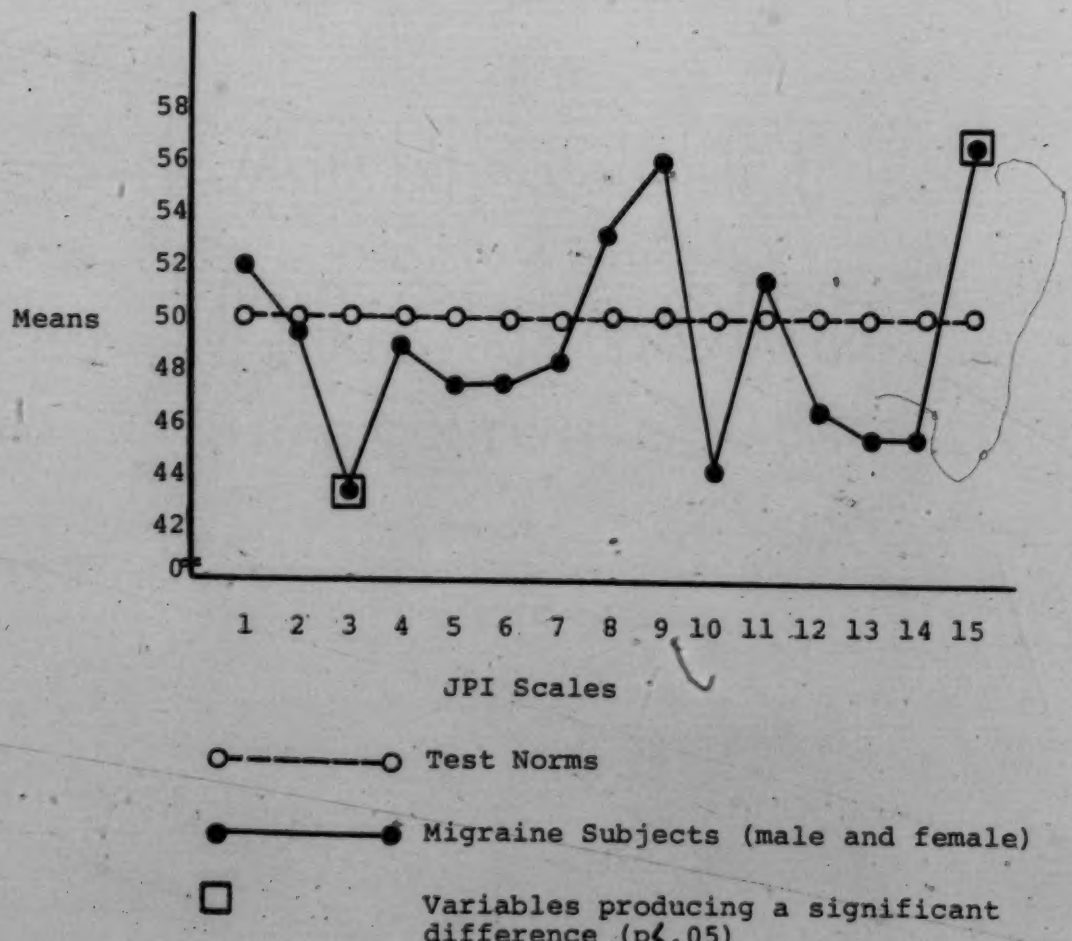


Table 5

Results of One Sample Hotelling T^2 Test

Comparing All Migraine Subjects to Test Norms (Transformed Data)

Overall T^2 Test: T=181.85 F=9.77 p=0.00

Individual Variable Comparisons

JPI Scale	Migraine Mean	Norm Mean	T^2	F	p	Confidence . Interval
Anx	51.85	50.00	2.08	0.11	1.00	44.33 - 59.37
Bdi	49.67	50.00	0.07	0.004	1.00	42.47 - 56.795
Cpx	43.40	50.00	36.58	1.96	0.03*	37.00 - 49.79
Cny	48.74	50.00	1.18	0.06	1.00	41.95 - 55.53
Enl	47.53	50.00	3.35	0.18	1.00	39.64 - 55.43
Inv	47.66	50.00	3.33	0.18	1.00	40.13 - 55.18
Iaf	48.38	50.00	2.45	0.13	1.00	42.34 - 54.43
Org	53.16	50.00	6.84	0.37	0.98	46.08 - 60.25
Rsy	56.06	50.00	31.70	1.70	0.08	49.76 - 62.35
Rkt	44.22	50.00	29.59	1.59	0.10	37.99 - 50.44
Ses	51.78	50.00	2.45	0.13	1.00	45.12 - 58.44
Sca	46.77	50.00	7.01	0.38	0.98	39.61 - 53.92
Spt	45.51	50.00	17.32	0.93	0.54	39.18 - 51.82
Tol	45.55	50.00	13.18	0.71	0.77	38.08 - 52.80
Vol	56.89	50.00	38.43	2.06	0.02*	50.38 - 63.40

Note: df1=58, df2=58 for F-ratios

Critical T^2 at alpha $_{.05}$=34.31.

*$p \leq .05$

Table 6

JPI Scales Loading Onto the Five Identified Factors

Factor	Description	Scales	Loadings
Factor One	General Factor	Bdi	.78
		Cpx	.73
		Enl	.62
		Inv	.63
		Rkt	.52
		Ses	.45
		Tol	.71
		Cny	-.69
Factor Two	Anxiety and Interpersonal Relating	Anx	.67
		Iaf	.80
		Spt	.60
Factor Three	Social Ease	Ses	.66
		Sca	.75
Factor Four	Socialization to Traditional Values	Org	.42
		Rsy	.77
		Vlo	.70
Factor Five	Carelessness in Responding	Inf	.85

1 Jackson, D.N. Jackson Personality Inventory (Manual). New York: Research Psychologists Press, Inc., 1976, p.25.

differences significant at the .05 level--the Complexity scale ($F=1.96$; $p=0.03$) and the Value Orthodoxy scale ($F=2.06$; $p=0.02$). Trends toward significance were revealed in the Responsibility ($F=1.70$; $p=0.08$) and Risk Taking ($F=1.59$; $p=0.10$) scales.

A further comparison of these variables was made according to the factors which have been identified by factor analysis for the JPI. Jackson (1976) reported a finding of five major factors in the JPI--four relating to various groupings of personality scales and one for the Infrequency scale. The scales loading onto each factor are listed in Table 6. Linear combinations of the scales for each of the four personality factors were used to compare the migraine subjects to the test norms to examine how these factors contributed to the significant T^2 finding. Results of the comparison of these factors are contained in Table 7. These results clearly indicated that the significant migraine-test norm difference involved the fourth JPI factor which combined the Organization, Responsibility, and Value Orthodoxy scales.

D. 4.4 Multivariate Profile Analysis

In the above analysis the data of male and female subjects was combined under the assumption that the differences in personality scores according to sex (which were apparant in the raw score norms) were controlled for through the use of the transformed scores for the JPI. To

Table 7

Linear Combinations of Variables For Factors Comparing All Migraine Subjects to Test Norms (Transformed Data)

Factor	T^2	F	p
1	17.00	0.91	0.55
2	2.90	0.16	1.55
3	0.58	0.03	1.00
4	50.67	2.72	0.00*

Note: df1=15, df2=58 for F-ratios

Critical T^2 at alpha $_{.05}$=34.31

*$p \leq .05$

test this assumption a comparison of the male and female migraine subjects was conducted through a multivariate profile analysis. This analysis compared the profiles plotted in Figure 4 in three ways (Morrison, 1967): (1) a test of the equality of response means through a comparison of the vector of variable means; (2) a comparison of the parallelism of the profile line segments; and (3) a test of the equality of the treatment levels through a comparison of the group means calculated over all variables.

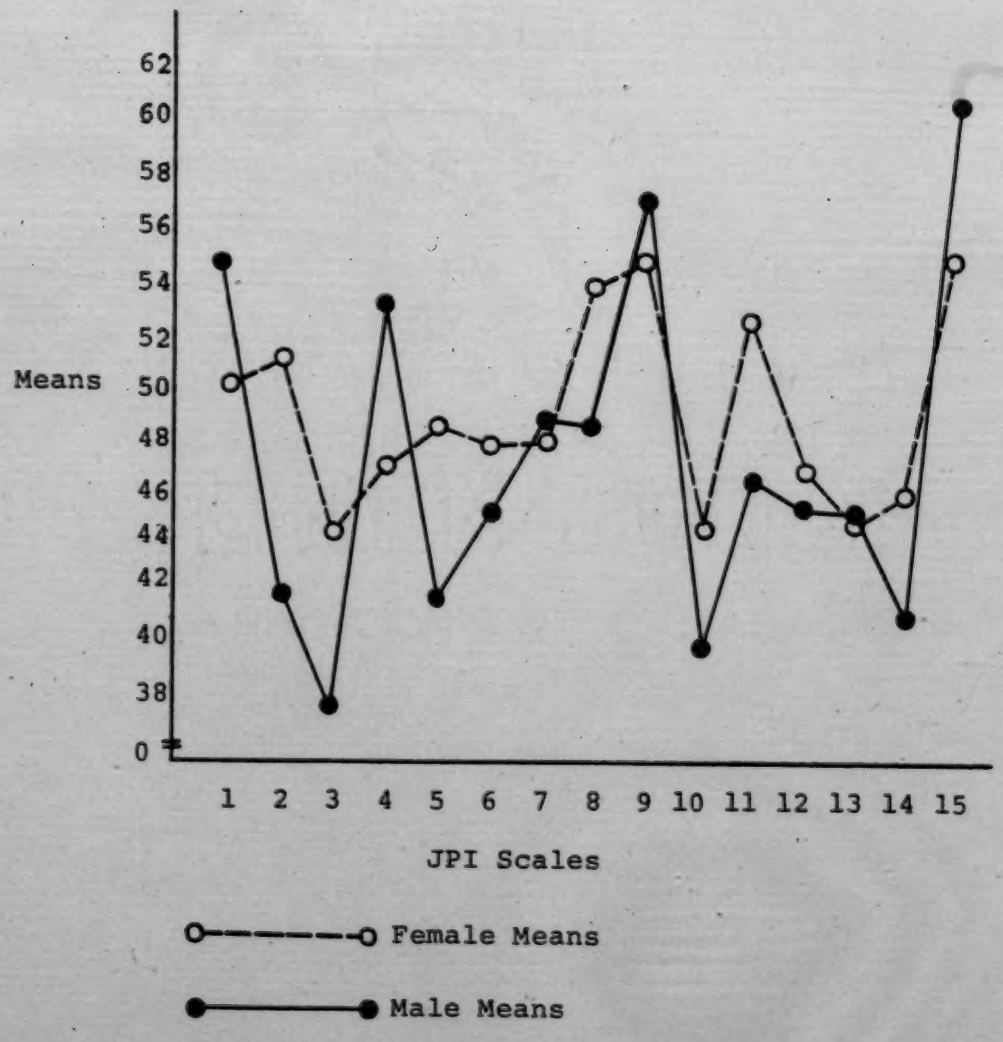
The first test of the equality of response means tested whether or not the vector of the variable means were equal for the two groups of migraine subjects. The Raos Approximate F test using Wilks Lambda revealed a non-significant difference at the .05 level (F-ratio = 1.73; p=0.07).

The second test for parallelism compared the profile line segments of adjacent responses for the two groups. Thus, the distance between the male and female migraine subjects on variable 1 was compared to this distance on variable 2 which in turn was compared to the distance on variable 3 and so forth to the fifteenth variable. Again the Raos Approximate F test using Wilks Lambda failed to produce a significant finding at the .05 level (F-ratio=1.73; p=0.07).

The test of the equality of the levels (or heights) of the mean for each group calculated over all of the 15 variables was, unlike the first two tests, found to be

Figure 4

Comparison of Means of Male and Female Migraine Subjects on the 15 JPI Scales (Transformed Data)



significant at the .05 level (Raos Approximate F test using Wilks Lambda produced an F-ratio of 4.16; p=0.045).

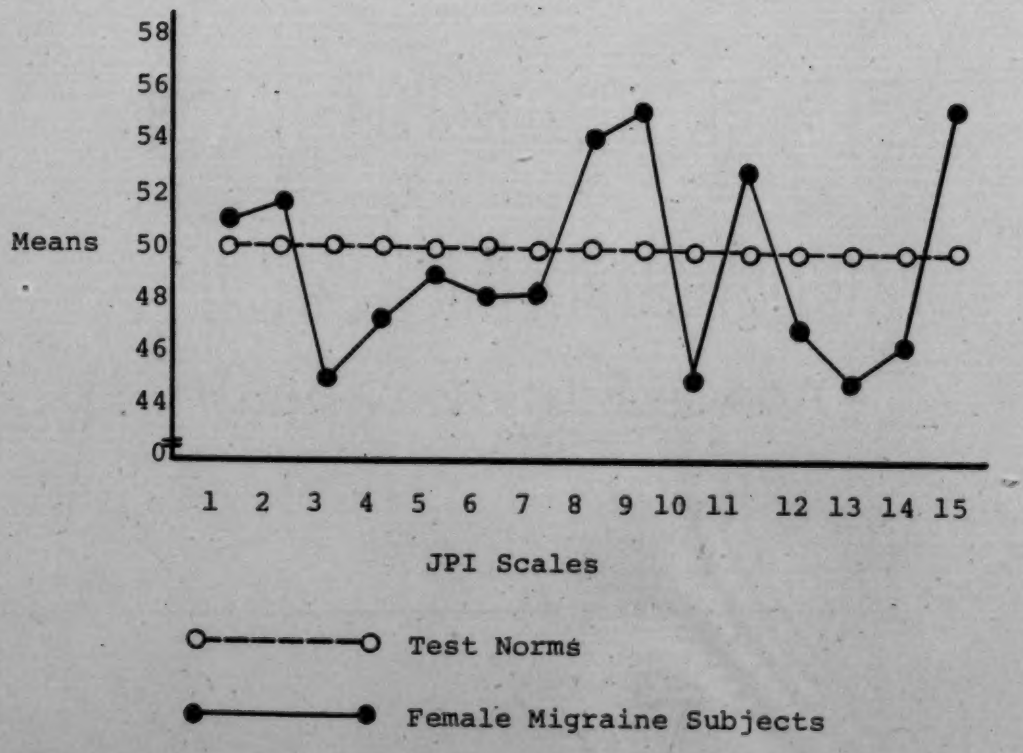
In light of the finding of a significant difference in the levels of the male-female profiles and the trend towards significant differences in the first two tests, it appeared that the assumption of no difference between these groups was untenable. Consequently, a comparison of the migraine subjects to the test norms according to sex was indicated. In that only 16 male subjects were available in this study, the ratio of male subjects to variables (16:15) produced a field which was too small to allow meaningful calculations to be made. Hence, a male migraine-test norm comparison was excluded.

E. 4.5 One Sample Hotelling T^2 Test, Female Subjects Only

For the remaining group of 57 female migraine subjects a one sample Hotelling T^2 test was conducted for the comparison of this group to the test norms using transformed data (as plotted in Figure 5). Results of this analysis revealed that $T^2=151.27$ and $F=7.56$. With degrees of freedom for the F statistic of 15 and 42 the probability of this value was found to be less than .01. Thus, the null hypothesis of no difference between the simultaneous comparison of means for the female migraine as compared to the test norms was not supported. This finding was identical to that obtained when the males and females were combined into one group.

Figure 5

Comparison of Female Migraine Subject and Test Norm Means on the 15 JPI Scales (Transformed Data)



Isolation of the variable(s) contributing to this difference was performed in like manner to that for the combined group of subjects. These calculations are reported in Table 8. The results of this analysis revealed that, unlike the combination of male-female migraine subjects results, none of the 15 JPI variables produced a difference between the female migraine subjects and the test norms which was significant at the .05 level. In other words, the overall T^2 test found that the means of these groups when compared simultaneously (when the two lines in Figure 5 were compared overall) produced a significant difference but there were no significant differences between any of the pairs of means. This situation is due to the different type of comparison made in each of the above cases. The overall T^2 test applied weights to each variable which maximized the value of T^2. The individual comparisons assigned a weight of one to the variable being tested and zero to all other variables. Through these different weightings and the difference in what was actually being tested the individual variables taken singularly did not isolate any specific significant differences as was the case when they were taken collectively.

It can readily be seen however that similar trends towards significance in the combined and female only comparisons were present. The smallest probabilities in the female analysis were reported for the two scales which produced significance in the combined data--the Value

Table 8

Results of One Sample Hotelling T^2 Test Comparing Female Migraine Subjects to Test Norms (Transformed Data)

Overall T^2 Test: T=151.27 F=7.56 p=0.00

Individual Variable Comparisons

JPI Scale	Migraine Mean	Norm Mean	T^2	F	p	Confidence Interval
Anx	50.93	50.00	0.35	0.02	1.00	41.12 - 60.68
Bdi	51.82	50.00	1.80	0.09	1.00	43.42 - 60.23
Cpx	44.93	50.00	19.78	0.989	0.48	37.88 - 51.98
Cny	47.44	50.00	4.02	0.20	1.00	39.54 - 55.34
Enl	49.02	50.00	0.40	0.02	1.00	39.40 - 58.63
Inc	48.30	50.00	1.44	0.07	1.00	39.542- 57.05
Iaf	48.21	50.00	2.17	0.11	1.00	40.71 - 55.72
Org	54.44	50.00	10.16	0.51	0.92	45.83 - 63.05
Rsy	55.61	50.00	18.66	0.93	0.54	47.58 - 63.65
Rkt	45.37	50.00	14.43	0.72	0.75	37.83 - 52.91
Ses	53.19	50.00	7.10	0.36	0.98	45.79 - 60.60
Sca	47.05	50.00	4.70	0.24	1.00	38.64 - 55.46
Spt	45.47	50.00	13.11	0.66	0.81	37.74 - 53.20
Tol	46.47	50.00	5.83	0.29	0.99	37.44 - 55.51
Vol	55.63	50.00	21.89	1.09	0.39	48.19 - 63.08

Note: df1=15, df2=42 for F-ratios

Critical T^2 at alpha $_{.05}$=38.24

Orthodoxy (F=1.09; p=0.39) and the Complexity(F=0.99; p=0.48) scales.

A comparison of the linear combinations of variables according to the JPI factors was also conducted for the female only data with the results reported in Table 9. As was the case with the comparisons of each individual variable, these combinations produced no significant differences at the .05 level although a trend towards significance was evident for the fourth factor. This finding shadows the significant difference for this variable from the combined male-female migraine subjects.

In all, it appeared that the elimination of the male migraine subjects served to decrease the differences found when all migraine subjects were combined. The patterns of significance from the combined analyses remained for the female only comparisons but only as non-significant trends. The overall significant difference between migrainous subjects and test norms was found, however, in all analyses.

Table 9

Linear Combinations of Variables For Factors Comparing Female Migraine Subjects to Test Norms (Transformed Data)

Factors	T^2	F	p
1	5.12	0.26	1.00
2	3.16	0.16	1.00
3	0.01	0.00	1.00
4	33.06	1.65	1.00

Note: df1-15, df2-42 for F-ratios

Critical T^2 at $alpha_{.05}$=34.31

V. Chapter Five

DISCUSSION AND IMPLICATIONS OF RESULTS

A. 5.1 General Statement of Findings

The results outlined in Chapter Four have offered general although somewhat ambiguous support for the 'migraine personality' type. Basically, these findings suggested that the migraine subjects in this study differed significantly from the norms reported for the testing tool used. This difference was most evident for both the combined male-female and female only analyses in the comparison of all the personality variables tested taken collectively. Weaker support was found for specific personality variable differences. Thus, although an overall personality difference between migraine subjects who seek treatment and the test norms was indicated, this was not as clearly delineated or as strongly indicated for specific variables as much of the literature (especially the clinical observational literature) in this area has indicated.

B. 5.2 Specific Findings

The specific findings of this study pertain to three aspects of the 'migraine personality' issue: (1) the overall personality difference between migraine subjects and the test norms; (2) the specific personality variables pertinent to this personality type; and (3) the male-female differences amongst migraine subjects.

C. 5.2.1 Overall Personality Difference

The finding of the first area dealing with an overall personality difference was based on a comparison of migraine subjects (for combined sexes and females alone) and JPI test norms for all 15 variables compared simultaneously. Thus, the essence of this comparison was on the personality pattern differences between these groups across all the scales used taken collectively as opposed to considerations of each individual variable. This analysis, in line with the previous research and literature supporting the 'migraine personality' type, revealed a significant difference for both the combined and female only groups.

This finding indicates that, when all 15 JPI variables are taken collectively, the migraine subjects reveal a pattern which is different enough to suggest that this group is not a part of the population on which the JPI was normed. Consequently, the notion of a unique 'migraine personality' type amongst those who seek headache treatment was supported in that migrainous and non-migrainous individuals were discriminated on the basis of their personality profiles.

D. 5.2.2 Specific Personality Variables

From the general support for a 'migraine personality' difference for the group tested, individual personality variables were examined for their contribution to this finding. Thus each of the 15 personality variables were tested (individually and in combinations for the factors of

the JPI) to determine whether the difference between the migraine subjects (for combined sexes and females alone) and the test norms for that variable was significant. From these comparisons two variables (Value Orthodoxy and Complexity) stood out as contributing heavily to the migraine-test norm difference as did the fourth factor which related to socialization to traditional values.

The significant finding from the combined migraine group of a deviantly high score on the Value Orthodoxy scale indicated a tendency towards upholding more traditional values. Jackson (1976, p. 11) described high scorers on this scale as "moralistic, conventional, strict, prim, devout, prudish, puritanical, righteous, [and] rigid". A similar difference between the male-female migraine group and the test norms was revealed in the analysis of the JPI variables when they were grouped according to the factors for this inventory. The only significant result obtained was for the fourth factor which, like the Value Orthodoxy scale, expected a person "to be planful and orderly, to see himself as honest and law-abiding, and to be relatively conservative in terms of social values" (Jackson, 1976, p. 25).

As they are described above, these two similar findings can be seen as being in line with previous 'migraine personaity' findings. Throughout this literature the traits of inflexibility (Mitchell & Mitchell, 1971; Ross & McNaughton, 1945; Wolff,1937) and rigidity (Sperling, 1952) seem to indicate that conventional unchanging values would

likely be present amongst migraine subjects. These findings are most closely aligned to that reported by Kudrow (1974, p. 200) who found cluster migraine headache subjects to be significantly higher than the 16PF test norms on the personality scale related to being "conscientious, perservering, responsible, staid, [and] moralistic". Thus, the findings of high Value Orthodoxy and socializaton towards traditional values do not conflict with that portion of the literature which supported the 'migraine personality' type.

While a traditional, orthodox value orientation was a personality variable which, in line with earlier reports, differentiated migraine subjects from the test norms for the JPI, its meaning and direct relevance to the 'migraine personality' type must be questioned due to the nature of the norm comparison group. Since a college population comprised this group it is not clear whether this finding related to a migrainous--non-migrainous difference or to the possibility of college students being more liberal in their values than the group of older migraine subjects. Jackson (1976, p. 19) suggested that this problem may confound interpretation of the Value Orthodoxy scale in that "it is one scale in which significant differences would be expected between young adults and older adults". Consequently, the finding of high Value Orthodoxy in this and Kudrow's (1974) study and the significant difference for the fourth JPI factor may well be indications of age as opposed to migraine

related traits. Hence, while a significant difference was present for this trait, it cannot be interpreted as part of a 'migraine personality' type nor can it be used to describe the personality of migrainous individuals who seek treatment.

Likewise the Complexity scale difference which was suggested by the data in this study (for the combined migraine group) is very difficult to interpret as clear cut support of the 'migraine personality' type. Statistically a clear migraine-test norm difference was indicated in which the subjects were found to be deviantly low thereby conforming to Jackson's (1976, p. 10) description of being "uncomplicated, unreflective, straightforward, predictable, [and] matter-of-fact". This trait however may be confounded by the very presence of migraine headaches. A low preference for complex things may be characteristic of people predisposed toward migraine or it may be that the coping mechanisms used by migraine subjects to deal with their frequent, intense headaches have lead to a lower complexity trait. In other words, the presence of a migraine personality characteristic of this type cannot be clearly indicated as a causal factor in producing migraine headaches nor as the result of experiencing repeated, painful episodes of headaches. Indeed either or both of these speculations may be valid etiological factors in migraine or its personality type but neither can be argued on the basis of the present research findings.

Absent from the findings for specific variables in the present study was significant support for many of the characteristics which would be predicted from the literature which upholds the 'migraine personality' type. For example, the routine oriented, conscientious, orderly 'migraine personality' characteristics (Alvarez, 1947; Furmanski, 1952; Mitchell & Mitchell, 1971) were not supported directly in the migraine subjects' scores for the Organization scale. While support for this variable taken individually was absent, it was however indirectly supported through its role as one of the scales composing the JPI factor along which a significant difference for the combined migraine group was found. Likewise, the Responsibility scale for which only a trend towards significance was evidenced in the combined group analysis was also supported through its contribution to this fourth factor. High levels of responsibility have been cited as a 'migraine personality' characteristic in the reports of Alvarez (1947) and Kudrow (1974) and hence would be expected to produce significant differences. The indirect support of these traits and the problem in interpreting the JPI factor of socialization to traditional values mentioned earlier serve to decrease the contributions of these findings to the quest for specific 'migraine personality' traits. Consequently, the indications which the variables of Organization and Responsibility produced cannot logically be taken as evidence of specific 'migraine personality' characteristics.

While high levels of organization and responsibility received at least some indirect support many scales which correspond to the 'migraine personality' traits reported in the literature were not supported in any way. For example, the Breadth of Interest scale did not differentiate between the migraine subjects and the test norms. In so much as inflexibility is a defining adjective for low scorers on this scale (Jackson, 1976) it would be expected from the 'migraine personality' literature that migraine subjects would score low on this variable. The detachment from others (Touraine & Draper, 1934; Wolff, 1937) hostility (Fromme-Reichman, 1937; Henryk-Gutt & Rees, 1973; Kolb, 1963) and resentment (Paulley & Haskell, 1975) cited as 'migraine personality' traits relate fairly well to Jackson's (1976, p. 10) description of low scorers on the Interpersonal Affect scale as "unresponsive, distant, hard-hearted, taciturn, unsentimental, indifferent, [and] cold". Consequently, that this scale did not differentiate between the migraine subjects and the JPI norms is in contradiction to the 'migraine personality' literature. Further contradiction to characteristics cited for this personality type was evident for the Tolerance scale. No significant differences were found for this scale inspite of the support the trait of intolerance has received from Ross and McNaughton (1945).

Most notably absent from the present study was any support for the high anxiety and tension which has been

repeatedly reported in the literature (Alvarez, 1947; Furmanski, 1952; Henryk-Gutt & Rees, 1973; Kudrow, 1974; Mitchell & Mitchell, 1971; Price & Blackwell, 1980; Selby & Lance, 1960; Sperling, 1952, Touraine & Draper, 1934; Wolff, 1937). Not only is this absence of a significant finding for the Anxiety scale in contradiction to the list of characteristics associated with the 'migraine personality' type, it also is in opposition to much of the related research concerning emotional triggers for the physiological events of a migraine headache attack. Wolff (1937, p. 919) suggested that "sustained tension...and anxiety...appeared to furnish optimal conditions in these subjects for the precipitation of attacks of migraine". Henryk-Gutt and Rees (1973) reported that an average of 54% of the migraine attacks reported by 49 migraine sufferers over a two month period were associated with emotional stressors such as anxiety, anger, resentment, etc. Similarly, Mitchell and Mitchell (1971) speculated a direct link between the experiencing of anger, anxiety, etc. and the initiation of the first stages of the physical experiencing of a migraine attack.

With such importance attached to this variable in the literature it is interesting that the combined migraine subjects in this study scored almost exactly the same as the test norms on the Anxiety scale (migraine mean=51.85, test norm mean=50.00). Thus it appeared that these subjects did not respond in a deviantly high manner to those items on the

JPI which incorporated adjectives such as jittery, worried, upset, excitable, high-strung, nervous, choked up, or anxious.

While this lack of confirmation for previous findings of high anxiety tends to suggest that migraine subjects are no more anxious than others it does not rule out the possibility that they are indeed experiencing a great deal of anxiety but that it is being suppressed or going unrecognized. In other words, the migraine subjects in this study may indeed be more anxious than others but their interpretation and/or experience of this anxiety may be such that they do not see themselves in terms of the adjectives which have been used in the Anxiety scale items. If the migraine subjects perceive their level of anxiety as the same or as lesser than others they would be more apt to respond positively to an item such as "I seem to worry about things less than other people do".

This potential validity problem in interpreting the present research finding for the Anxiety scale is only suggested as a possibility. However, the idea should be entertained that the ability to accurately perceive oneself, or, as Loevinger (1966, p. 545) called it, "the capacity to conceptualize oneself" may have influenced the way in which the migraine subjects responded to the Anxiety and all other scales of this self-report personality inventory. In so far as Loevinger (1966) suggested that this ability is responsible for a great deal of the variance in personality

inventories all of the findings in this and other similar studies may be overshadowed by the subjects' lack of insight into or interpretation of themselves. For 'migraine personality' type research this is of particular importance in that Rees (1974, p. 119) suggested that "the suppression or inadequate expression of any emotion whether it be anxiety, resentment, humiliation or anger will tend to lead to the development of states of emotional tension which can precipitate migraine". Consequently, there is a need for research to clarify how accurately migraine subjects perceive and express themselves as well as to determine the extent to which suppression of emotional experiences influence reported anxiety levels and all other personality variables. Through such research it could be determined how accurate our interpretations of their personality scores have been as well as if and when it is necessary to increase the self perception and awareness of migraine subjects as a means of facilitating better control over those emotional factors which can produce their headaches.

In all, the analyses of specific variables, unlike that of the overall analysis of all variables collectively, failed to offer strong support of those traits which have been suggested as forming the 'migraine personality' type. It appeared that a personality difference was indicated by the results of this inventory in its totality but that its individual scales were unable to isolate particular differences. Consequently, the findings of this study can be

seen as supporting the general notion of a unique 'migraine personality' type for those headache subjects who seek treatment but not in as clear a way as much of the literature has suggested. The specific personality characteristics upon which the 'migraine personality' type has been founded have not been supported. In light of Schnarch and Hunter's (1979) speculation of more frequent and severe symptoms and a greater tendency to seek treatment amongst clinical migraine subjects, one would expect that if a 'migraine personality' type existed it would be more pronounced in such an extreme group. In that the results of the present study were based on such a clinical sample, the lack of confirmation of specific personality characteristics constituting a 'migraine personality' type is of importance. If such an extreme group failed to support the specific characteristics of this personality type their validity certainly appears to be questionable.

The major suggestion of this study is that the overall form of the personality of this group differed from that of the test norms to which it is, in clinical practice, evaluated. As a result, the shape of the 'migraine personality' type must be reconsidered from its current simplistic form as a list of traits along which migraine subjects are deviantly high on some and low on others. The 'migraine personality' type which was indicated in this study is rather a more ambiguous, global personality pattern difference.

E. 5.2.3 Male-Female Personality Differences

The disorder of migraine headaches has long been considered to be primarily an affliction of the female gender. Waters' (1970) study on the prevalence of headache confirmed this idea through his finding of a significantly higher proportion of female headache sufferers at all age levels. The male-female ratio in the present study of 1:3.56 reflected this sex difference.

Inspite of the male-female difference in the prevalence of this disorder and the sex specific norms in standardized psychometric tools the idea of a 'migraine personality' type has traditionally been proposed equally for both sexes. Not only has the existence of this unqiue personality type been so acclaimed for all migraine subjects, the specific variables thought to compose it have generally been attributed identically to each sex. In all of the literature reviewed in Chapter Two only one of the studies that offered any support for this type differentiated between male and female personality characteristics. This study, by Henryk-Gutt and Rees (1973), found: (1) only female migraine subjects to be higher on anxiety and somatization than the nonmigrainous sample while no difference was found for these traits for their male subjects; and (2) only male migraine subjects to be significantly lower than the no headache controls on the extraversion component of Form A of the Eysenck Personality Inventory. All other studies and clinical reports appeared to have assumed that male and

female migraine headache subjects were similar enough to warrant studying them only in combination as one group or they have studied only female migraine subjects.

In line with the different male-female findings reported in the HenryK-Gutt and Rees study (1973) the present study revealed a trend towards a male-female personality difference amongst migrainous individuals. This trend was obtained inspite of the use of JPI scores which, in the norming population, had been transformed to bring the sexes to a common scale. The precise nature of this male-female difference could not be delineated due to the small number of male migraine subjects. It appeared however that the male migraine group's scores were more extreme than those for the females. When the male subjects were excluded from any analyses of specific variables previously significant differences were decreased to below significant levels although the general pattern amongst the variables remained for the female group in a lessened state. Thus while both the male-female combined and female only migraine group revealed similar significant overall personality pattern differences, different results were obtained for each group when individual variables and combinations of variables for factors were analyzed.

In that the use of the combined group increased the migraine-test norm differences to significant levels where significance was not otherwise found and that much of the supportive literature on the 'migraine personality' type is

based on such combined groups of subjects, the validity of many of the claims in the literature must be questioned. In those studies where significant results were obtained for combined groups it is unknown whether or not such would be the case if males and females were studied separately. As a result, our current understanding of the 'migraine personality' may mistakeningly be based on inappropriate groupings of subjects. It is possible that either separate male and female 'migraine personality' types exist or that it only exists for one sex and has inappropriately been attributed to both. Clearly, the need for further research into this question of male-female differences within the 'migraine personality' type is indicated.

F. 5.3 Summary

The results discussed in this chapter from the present study's empirical assessment of the 'migraine personality' type attempted to address the question concerning whether or not, in line with the 'migraine personality' type literature, a set of personality characteristics or traits existed that could discriminate between migrainous and non-migrainous people. From the results obtained the idea that the overall personality type of migrainous individuals does in some way constitute a unique personality type was not disconfirmed although its support must be considered as tentative. Basically the qualification to this support was the lack of evidence for the specific 'migraine personality'

type traits. In all, the JPI was found to discriminate between migrainous and non-migrainous individuals not along specific, individual variables but rather along all variables compared simultaneously.

This tentative support for the 'migraine personality' type implicates strongly the need for further research into this area. Already mentioned were: (1) the need for research into how effectively migrainous people conceptualize their personality traits and report this on inventories; and (2) the need for research into possible male-female 'migraine personality' type differences. In addition to these, further testing of migrainous groups is needed to explore those 'migraine personality' traits which were not covered by the JPI. The traits of perfectionism and striving for achievement are commonly referred to personality variables which have not been considered in the present study.

Beyond these research implications the general finding of an overall migraine personality pattern indicates the need for specific norms for this group and caution in the interpretation of personality testing and research based on the norming data given for standardized psychometric tools. Furthermore, in so far as migrainous individuals who seek treatment are a unique group the personality dimension should be considered in this treatment. As Friedman, von Storch and Merritt (1954, p. 777) suggested, "an understanding of the underlying psychologic factors plays an important part in the management of migraine, for in the

ability of the patient to handle emotional tension lies the most satisfactory means of preventing the attacks in the majority of cases". Inherent in this implication is the call for a multidisciplinary appraoch to the treatment of migraine headaches--an approach which incorporates appropriate management of the psychological aspects of migraine with treatment of its psychological aspects.

In all, what the consideration of the psychological or personality aspects of migraine headaches indicated is that this much debated area is still far from being clarified. While this study questioned many aspects of the traditional 'migraine personality' type it could not reject it completely. With this finding perhaps the best clinical approach to migraine headache clients still lays in the following quote:

> Socrates, in Plato, would prescribe no Physick for Charmides' headache till first he had eased his troublesome mind; body and soul must be cured together, as head and eyes...

(Burton, quoted in Sacks, 1971, p. 8)

References

Ad Hoc Committee on Classification of Headache. Classification of Headache. American Medical Association Journal, 1962, 179, 717-718.

Adams, H.E., Feuerstein, M., & Fowler, J.L. Migraine headache: Review of parameters, etiology, and intervention. Psychological Bulletin, 1980, 87, 217-237.

Alvarez, W.C. The migrainous personality and constitution. American Journal of Medical Sciences, 1947, 213, 1-8.

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (2nd ed.). Washington, D.C.: American Psychiatric Association, 1968.

Anstie, F.E. Neuralgia and the Diseases that Resemble It. London: Macmillan, 1871.

Anthony, M., & Lance, J.W. The role of serotonin in migraine. In J. Pearce (ed.), Modern Topics in Migraine. London: William Heinemann Medical Books, Ltd., 1975.

Bihldorff, J.P., King, S.H., & Parnes, L.R. Psychological factors in headache. Headache, 1971, 11, 117-127.

Bille, B. Migraine in school children. Acta Paediatrica, 1962, 51, Suppl. 136.

Blanchard, E.B., Theobald, D.E., Williamson, D.A., Silver, B.V., & Brown, D.A. Temperature biofeedback in the treatment of migraine headaches. Archives of General Psychiatry, 1978, 35, 581-588.

Chapman, J. Neuralgia and Kindred Diseases of the Nervous System. London: Churchill, 1873.

Chapman, L.F., Ramos, A.O., Godell, H., Silverman, G., &

Wolff, H.G. A humoral agent implicated in vascular headache of the migraine type. Archives of Neurology, 1960, 3, 223-229.

Critchley, M. Migraine: From Cappadocia to Queen Square. In R. Smith (ed.), Background to Migraine: First Migraine Symposium, 8th-9th Nov., 1966. New York: Springer-Verlag New York Inc., 1967.

Dalessio, D.J. Wolff's Headache and Other Head Pain(3rd ed.). New York: Oxford University Press, 1972.

Dalessio, D.J. Migraine, platelets, and headache prophylaxis. American Medical Association Journal, 1978, 239, 52-53.

Davis, R.A., Wetsel, R.D., Kashiwagi, T., & McClure, J.N. Personality, depression, and headache type. Headache, 1976, 16, 246-251.

Day, W.H. Headaches: Their Nature, Causes and Treatment. London: Churchill, 1877.

Dukes, H.T., & Vieth, R.G. Cerebral arteriography during migraine prodrome and headache. Neurology, 1964, 14, 636-639.

Fanchamps, A. The role of humoral mediators in migraine headaches. Canadian Journal of Neurological Sciences, 1974, 1, 189-195.

Friedman, A.P. Migraine. Psychiatric Annals, 1975, 5, 271-278.

Friedman, A.P., von Storch, T.J.C., & Merritt, H.H. Migraine and tension headaches--A clinical study of two thousand cases. Neurology, 1954, 4, 773-788.

Fromm-Reichmann, F. Contribution to the psychogensis of migraine, Psychoanalytic Review, 1937, 24, 26-33.

Furmanski, A.R. Dynamic concepts of migraine. Archives of Neurology and Psychiatry, 1952, 67, 23-31.

Goldberg, L.R. Review of the Jackson Personality Inventory. In O.K. Buros (ed.), The Eighth Mental Measurements Yearbook (Vol. 1). New Jersey: The Gryphon Press, 1978, 867-871.

Hanington, E. Migraine. A platelet hypothesis. Biomedicine, 1979, 30, 65-66.

Harrison, R.H. Psychological testing in headache: A review. Headache, 1975, 14, 177-185.

Henryk-Gutt, R., & Rees, W.L. Psychological aspects of migraine. Journal of Psychosomatic Research, 1973, 17, 141-153.

Horrobin, D.F. Hypothesis: Prostaglandins and migraine. Headache, 1977, 17, 113-117.

Hotelling, H. The generalization of Student's ratio. Annals of Mathematical Statistics, 1931, 2, 360-378.

Jackson, D.N. Personality Research Form Manual. New York: Research Psychologists Press, 1967.

Jackson, D.N. Jackson Personality Inventory. New York: Research Psychologists Press, Inc., 1976.

Jackson, D.N. Reliability of the Jackson Personality Inventory. Psychological Reports, 1977, 40, 613-614.

Kaldegg, A. Migraine patients: A discussion of some test results. Journal of Mental Science, 1952, 98, 672-682.

Kolb, L.C. Psychiatric aspects of the treatment of headache. Neurology, 1963, 13, 34-37.

Korchin, S.J. Modern Clinical Psychology. New York: Basic Books, Inc., 1976.

Kudrow, L. Physical and personality characteristics in cluster headache. Headache, 1974, 13, 197-202.

Kudrow, L. Current aspects of migraine headache. Psychosomatics, 1978, 19, 48-57.

Liveing, E. On Migraine, Sick Headache and Some Allied Disorders. London: Churchill, 1873.

Loevinger, J. A theory of test response. In A. Anastasi (ed.), Testing Problems in Perspective. Washington, D.C.: American Council on Education, 1966, 545-556.

Lucas, R.N. Migraine in twins. Journal of Psychosomatic Research, 1977, 20, 147-156.

Lykken, D.T. Review of the Jackson Personality Inventory. In O.K. Buros (ed.), The Eighth Mental Measurements Yearbook (Vol. 1). New Jersey: The Gryphon Press, 1978, 871-873.

Maxwell, H. Migraine: Background and Treatment. Bristol: John Wright & Sons Ltd., 1966.

Merskey, H. Psychiatric aspects of migraine. In J. Pearce (ed.), Modren Topics in Migraine. London: William Heinemann Medical Books Ltd., 1975.

Mitchel & Mitchell, D.M. Migraine: An exploratory treatment application of programmed behavior therapy techniques. Journal of Psychosomatic Research, 1971, 15, 137-157.

Morrison, D.F. Multivariate Statistical Methods. New York: McGraw-Hill Book Company, 1967.

Paulley, J.W., & Haskell, D.A.L. The treatment of migraine without drugs. Journal of Psychosomatic Research, 1975, 19, 367-374.

Pearce, J. Migraine: A psychosomatic disorder. Headache, 1977, 17, 125-128.

Price, K.P., & Blackwell, S. Trait levels of anxiety and psychological responses to stress in migraineurs and normal controls. Journal of Clinical Psychology, 1980, 36, 658-660.

Kudrow, L. Current aspects of migraine headache. Psychosomatics, 1978, 19, 48-57.

Liveing, E. On Migraine, Sick Headache and Some Allied Disorders. London: Churchill, 1873.

Loevinger, J. A theory of test response. In A. Anastasi (ed.), Testing Problems in Perspective. Washington, D.C.: American Council on Education, 1966, 545-556.

Lucas, R.N. Migraine in twins. Journal of Psychosomatic Research, 1977, 20, 147-156.

Lykken, D.T. Review of the Jackson Personality Inventory. In O.K. Buros (ed.), The Eighth Mental Measurements Yearbook (Vol. 1). New Jersey: The Gryphon Press, 1978, 871-873.

Maxwell, H. Migraine: Background and Treatment. Bristol: John Wright & Sons Ltd., 1966.

Merskey, H. Psychiatric aspects of migraine. In J. Pearce (ed.), Modren Topics in Migraine. London: William Heinemann Medical Books Ltd., 1975.

Mitchel & Mitchell, D.M. Migraine: An exploratory treatment application of programmed behavior therapy techniques. Journal of Psychosomatic Research, 1971, 15, 137-157.

Morrison, D.F. Multivariate Statistical Methods. New York: McGraw-Hill Book Company, 1967.

Paulley, J.W., & Haskell, D.A.L. The treatment of migraine without drugs. Journal of Psychosomatic Research, 1975, 19, 367-374.

Pearce, J. Migraine: A psychosomatic disorder. Headache, 1977, 17, 125-128.

Price, K.P., & Blackwell, S. Trait levels of anxiety and psychological responses to stress in migraineurs and normal controls. Journal of Clinical Psychology, 1980, 36, 658-660.

Rees, W.L. Psychiatric and psychological aspects of migraine. In J.N. Cumings (ed.), Background to Migraine: Fourth Migraine Symposium, Sept. 11, 1970. New York: Springer-Verlag New York Inc., 1971.

Rees, W.L. Personality and psychodynamic mechanisms in migraine. In M. Musaph (Ed.), Proceedings of the 2nd Congress of the International College of Psychosomatic Medicine Amsterdam, 1973: Mechanisms in Symptom Formation. New York: S. Karger, 1974, 111-122.

Ross, W.D., & McNaughton, F.L. Objective personality studies in migraine by means of the Rorschach method. Psychosomatic Medicine, 1945, 7, 73-79.

Sacks, O. Migraine: The Evolution of a Common Disorder. London: Faber and Faber, 1971.

Scheife, R.T., & Hills, J.R. Migraine headache: Signs and symptoms, biochemistry, and current therapy. American Journal of Hospital Pharmacy, 1980, 37, 365-374.

Schnarch, D.M., & Hunter, J.E. Personality differences between randomly selected migrainous and non-migrainous people. Psychotherapy: Theory, Research, and Practice. 1979, 16, 197-309.

Selby, G., & Lance, J.W. Observations of 500 cases of migraine and allied vascular headache. Journal of Neurology, Neurosurgery, and Psychiatry, 1960, 23, 23-32.

Sperling, M. A psychoanalytic study of migraine and psychogenic headache. Psychoanalytic Review, 1952, 39, 152-163.

Tatsuoka, M.M. Multivariate Analysis: Techniques for Educational and Psychological Research. New York: John Wiley & Sons Inc., 1971.

Touraine, G.A., & Drpaer, G. The migrainous patient. The Journal of Nervous and Mental Disease, 1934, 80, 1-23 and 183-204.

Trowbridge, L.S., Cushman, D., Gray, M.G., & Moore, M. Notes on the personality of patients with migraine. The Journal of Nervous and Mental Diseases, 1943, 97, 509-517.

Wakefield, G. Clinical features of migraine, with special reference to the migraine aura. In J. Pearce (ed.), Modern Topics in Migraine. London: William Heinemann Medical Books Ltd., 1975.

Waters, W.E. Community studies of the prevalence of headache. Headache, 1970, 9, 178-186.

Wolff, H.G. Personality features and reactions of subjects with migraine. Archives of Neurology and Psychiatry, 1937, 37, 895-921.

Wolff, H.G. Headache and Other Head Pain. New York: Oxford University Press, 1963.

Appendix A

Subject Selection Criteria Data

1. Number of Subjects: Females N = 57
   Males N = 16
   TOTAL N = 73

2. Age:
   Females: Mean Age = 39.3 years Range = 20 to 54 years
   Males: Mean Age = 37.8 years Range = 22 to 53 years
   TOTAL: Mean Age = 39.96 years Range = 20 to 54 years

3. Does the head pain sometimes exist on one side of the head only?
   Yes: 68
   No: 5

4. Is the head pain generally pulsative or throbbing?
   Yes: 60
   No: 13

5. Does nausea or vomiting generally accompany the headache?
   Yes: 66
   No: 7

6. Does sensitivity to light generally accompany the headache?
   Yes: 66
   No: 7

7. Has your headache been diagnosed as a migraine by your physician?

Yes: 60

No: 13

Appendix B

Headache Questionnaire Data

I. Questions pertaining to prodromes.

1. Before the headaches actually begin you are able to tell that a migraine is coming through visual changes or distortions.

True: 49.28%

2. Before the headaches actually begin you are able to tell that a migraine is coming by some other sensory (eg. smell, taste, hearing) or motoric changes.

True: 56.52%

II. Questions pertaining to characteristics of tension headaches.

1. Usually the headaches are characterized by pressure on the head, the sensation of which might be described as a tight band across the forehead and around the head.

True: 60.87%

2. Usually the head pain exists in the forehead region, between the eyebrows and hairline.

True: 30.44%

3. Usually the head pain begins in the neck at the base of the head and then radiates toward the temporal and forehead regions.

True: 42.03%

4. The headaches occur in many different regions from time to time.

True: 42.03%

III. Questions pertaining to characteristics of migraine headaches.

1. Frequently the head pain exists on one side of the head only.

True: 84.06%

2. Usually the head pain exists in the temporal regions (at eye level on the side of the head).

True: 71.01%

3. Frequently the headaches are throbbing, pulsating headaches.

True: 84.06%

4. Nausea or vomiting generally accompany the headaches.

True: 72.46%

5. Sensitivity to light generally accompanies the headaches.

True: 92.75%

6. Sensitivity to sound generally accompanies the headaches.

True: 86.96%

7. The headaches usually only occur during menses.

True: 5.56% (of female subjects)

8. The headaches occur during menses and at many other times.

True: 88.89% (of female subjects)

IV. Questions pertaining to physiological reactions to stress.

1. In general, when you confront a stressful situation (eg. before giving an important talk, when stopped by a policeman, etc.)how does your body respond?

a) oily skin True: 14.49%

b) sweaty feet True: 11.59%

c) flushed face True: 60.67%

d) frequent need to urinate True: 44.93%

e) cold hands True: 63.77%

f) burping True: 4.35%

g) face feels hot True: 65.22%

h) tight stomach muscles True: 69.56%

i) sweaty hands True: 42.03%

j) gassiness True: 21.74%

k) acid stomach True: 31.88%

l) shallow, rapid breathing True: 46.38%

m) cold feet True: 39.13%

n) diarrhea True: 27.54%

o) palpitation True: 56.52%

p) short breath True: 47.83%

q) shaky hands True: 52.17%

Appendix C

Scale Descriptions for the Jackson Personality Inventory[2]

SCALE	DESCRIPTION OF HIGH SCORER	DESCRIPTION OF LOW SCORER
Anxiety	Tends to worry over inconsequential matters; more easily upset than the average person; apprehensive about the future	Remains calm in stressful situations; takes things as they come without worrying; can relax in difficult situations; usually composed and collected
Breadth of Interest	Is attentive and involved; motivated to participate in a wide variety of activities; interested in learning about a diversity of things	Has narrow range of interests, remains uninterested when exposed to new activities; has few hobbies; confined tastes
Complexity	Seeks intricate solutions to problems; is impatient with oversimplification; is interested in pursuing topics in depth regardless of their difficulty; enjoys abstract thought; enjoys intricacy	Prefers concrete to abstract interpretations; avoids contemplative thought; uninterested in probing for new insight
Conformity	Is susceptible to social influence and group pressures; tends to modify behaviour to be consistent with standards set by others; follows suit; fits in	Refuses to go along with the crowd; unaffected and unswayed by others' opinions; independent in thought and action

Energy Level	Is active and spirited; possesses reserves of strength; does not tire easily; capable of intense work or recreational activity for long periods of time	Tires quickly and easily; avoids strenuous activities; lacks stamina; requires a great deal of rest; slow to respond
Innovation	A creative and inventive individual, capable of originality of thought; motivated to develop novel solutions to problems; values new ideas; likes to improvise	Has little creative motivation; seldom seeks originality; conservative thinker; prefers routine activities
Interpersonal Affect	Tends to identify closely with other people and their problems; values new ideas; likes to improvise	Emotionally aloof; prefers impersonal to personal relationships; displays little compassion for other people's problems; has trouble relating to people; is emotionally unresponsive to those around him
Organization	Makes effective use of time; completes work on schedule; is not easily distracted	Frequently procrastinates; easily distracted; falls behind in assignments or duties; often loses things; personal effects frequently in disarry; handles situations in an unsystematic unpredictable way; rarely plans before doing things

Responsibility	Feels a strong obligation to be honest and upright; experiences a sense of duty to other people; has a strong and inflexible conscience	Apathetic about helping others; frequently breaks a promise; takes little interest in community projects; can't be relied on to meet obligations; refuses to be held to answer for his actions
Risk Taking	Enjoys gambling and taking a chance; willingly exposes self to situations with uncertain outcomes; enjoys adventures having an element of peril; takes chances; unconcerned with danger	Cautious about unpredictable situations; unlikely to bet; avoids situations of personal risk, even those with great rewards; doesn't take chances regardless of whether the risks are physical, social, monetary, or ethical
Self Esteem	Confident in dealing with others; not easily embarrassed or influenced by others; shows presence in interpersonal situations; possesses aplomb	Feels awkward among people, especially strangers; ill at ease socially; prefers to remain unnoticed at social events; has low opinion of himself as a group member; lacks self-confidence; easily embarrassed
Social Adroitness	Is skillful at persuading others to achieve a particular goal, sometimes by indirect means; occasionally may be seen as manipulative of others, but is ordinarily diplomatic; socially intelligent	Tactless when dealing with others; socially naive and maladroit; speaks in a direct, straigthforward manner; insensitive of the effects of his behaviour on others

Social Participation	Will eagerly join a variety of social groups; seeks both formal and informal association with others; values positive interpersonal relationships; actively social	Keeps to himself; has few friends; avoids social activities
Tolerance	Accepts people even though their beliefs and customs may differ from his own; open to new ideas; free from prejudice; welcomes dissent	Entertains only opinions consistent with his own; makes quick value judgments about others; feels threatened by those with different opinions; rejects people from different ethnic, religious, cultural or social backgrounds; identifies closely with those sharing his beliefs
Value Orthodoxy	Values traditional customs and beliefs; his values may be seen by others as "old fashioned"; takes a rather conservative view regarding contemporary standards of behaviour; opposed to change in social customs	Critical of tradition; liberal or radical attitudes regarding behaviour; questions laws and precedents; acts in an unconventional manner; believes that few things should be censored
Infrequency	Responds in implausible or apparently random manner, possible due to carelessness, poor comprehension, passive non-compliance, confusion or gross deviation	

2 Jackson, D.H. Jackson Personality Inventory (Manual). New York: Research Psychologist Press, Inc., 1976, pp. 10-11.